APTHC

10TH ASIA PACIFIC TRAVEL HEALTH CONFERENCE

7 - 10 May 2014 • Caravelle Hotel, Ho Chi Minh City, Vietnam

Emerging Infections & Travel

FINAL PROGRAM

Organized by:

Asia Pacific Travel Health Society

www.apthc2014.org

The 7th International Congress of the Asia Pacific Society of Infection Control

Taipei International Convention Center, Taiwan
March 26-29, 2015

Combating Infection for Global Health

Almost Time...to Submit Your Abstracts

Abstract Topics

- Surveillance and burden of HAI
- Health-care associated infection: diagnosis, treatment, and prevention
- Quality improvement using care bundles
- Multidrug-resistant organisms (MDRO)
- Antibiotic stewardship
- Special issues in infection control
- Outbreak investigation
- Tuberculosis and nontuberculous mycobacterial diseases
- HIV infection and AIDS
- Other viral infections (Enterovirus, Hepatitis, Rotavirus, Norovirus)
- Emerging infections (novel influenza, etc.)
- Diagnostic microbiology (rapid microbial detection, MALDI-TOF MS)
- Vaccination
- Information technology and eHealth
- Tropical medicine and parasitology

Top 10 Abstracts Award

This award will recognize the highest rated abstracts submitted by the regular submission deadline and accepted in the oral or poster sessions. Winners receive a certificate of recognition and complimentary registration to the Congress.

To apply, an applicant must

- be the presenting author of an accepted abstract; and
- submit the application during the online submission process.

Important Dates

Abstract Submission Deadline: October 26, 2014

Acceptance Notification: November 26, 2014

Early Bird Registration Deadline: January 26, 2015

Pre-registration Deadline: February 26, 2015

www.apsic2015.org

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ACKNOWLEDGMENTS

We wish to thank the following companies who, through their generosity, have helped make this Conference possible:

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WELCOME MESSAGE FROM APTHS PRESIDENT

Dear Colleagues,

It gives me great pleasure to welcome you in Ho Chi Minh City for the 10th Asia Pacific Travel Health Conference, being held at the historic Caravelle Hotel from the 7-10 May 2014.

The Asia Pacific Travel Health Society has come a long way since its inception over 14 years ago. Our society has established itself as the regional authority in educating and advocating healthy and safe travel within Asia Pacific among travel health practitioners, the travel industry and the general public. We now have close to 1,200 members and our biennial conferences have been attracting hundreds of clinicians, researchers, nurses, and allied health professionals from all over the world.

This year, the conference themed “Emerging Infections and Travel” features over 50 internationally renowned speakers and experts in various plenary lectures, symposia, interactive workshops, country reports, nurses session, and lively debates. We are once again thankful to the International Society of Travel Medicine for offering the Certificate of Travel Health® Examination just prior to the conference. This will help improve the standard for travel medicine in our region.

I am sure that you will enjoy the learning and networking opportunities APTHC 2014 has to offer. While you are here, I also hope you will take the opportunity to savor the exotic sights and sounds of Vietnam and the rest of the Mekong region.

Sincerely yours,

DR. SARAH BORWEIN
President, Asia Pacific Travel Health Society

WELCOME MESSAGE FROM ORGANIZING COMMITTEE CHAIR

On behalf of the Organizing Committee of the 10th Asia Pacific Travel Health Congress, I would like to welcome you to Ho Chi Minh City, Vietnam!

The Scientific Committee spearheaded by Assoc. Prof. Karin Leder has come up with an excellent scientific program featuring top-notched speakers from all over the world. The conference themed “Emerging Infections and Travel” covers a wide-range of topics including emerging infections and health impacts, re-emerging viral infectious diseases, preventative medicine, primary health care, and more. We are privileged to have over 50 world renowned experts as well as over 100 abstract authors selected to present in the free communication sessions.

This year’s conference has attracted hundreds of participants from 39 countries, 14 of which are outside the Asia Pacific region, a testament to how APTHC is becoming a worldwide authority in our field and reaffirms the rapidly growing interest in international travel within our region.

We would like to thank Dr. Rafi Kot and Dr. Phi Truong, for the local support and hospitality which made this conference possible. Likewise, we appreciate our industry partners for their continued support for the advancement of travel health and travel medicine in Asia Pacific.

Apart from the opportunity to learn, discuss, debate, exchange and share knowledge and experiences among colleagues, APTHC 2014 will also give you an opportunity to enjoy the best of what Vietnam has to offer. We have prepared an exciting Welcome Reception on the evening of May 7th which features traditional Vietnamese performances and cuisine.

Have a fruitful conference!

Sincerely yours,

PROF. ELI SCHWARTZ
Chair, APTHC 2014 Organizing Committee

COMMITTEES

Organizing Chair:	Prof. Eli Schwartz, Israel
Members:	Dr. Sarah Borwein, Hong Kong SAR
	Dr. Tony Gherardin, Australia
	Associate Prof. Karin Leder, Australia
	Dr. Lim Poh Lian, Singapore
	Prof. Annelies Wilder-Smith, Singapore
Local Organizing Committee Co-Chairs:	Dr. Rafi Kot, Vietnam
	Dr. Phi Truong, Vietnam

Scientific Committee

Chair:	Assoc. Prof. Karin Leder, Australia
Co-Chair:	Dr. Lim Poh Lian, Singapore
Members:	Dr. Pornthep Chanthavanich, Thailand
	Assoc. Prof. Santanu Chatarjee, India
	Dr. Regis Garrigue, Vietnam
	Dr. David Gaskell, Bangladesh
	Dr. Martin Haditch, Austria
	Assoc. Prof. Ian Heslop, Australia
	Dr. Li Yang Hsu, Singapore
	Dr. Zheng Jianning, China
	Prof. Addeba Kamazulamun, Malaysia
	Dr. Colleen Lau, Australia
	Prof. Peter Leggat, Australia
	Dr. Zhang Min, China
	Prof. Kazunobu Ouchi, Japan
	Prof. Prativa Pandey, Nepal
	Prof. Israel Potasman, Israel
	Prof. Mark Shaw, New Zealand
	Dr. Mike Starr, Australia
	Prof. Paul Tambyah, Singapore
	Dr. Guy Thwaites, UK
	Prof. Joe Torresi, Australia
	Dr. Jenny Vissar, New Zealand
	Prof. Priscilla Rupali-Velore, India
	Ms. Claire Wong, New Zealand

GENERAL INFORMATION

Venue
Caravelle Hotel
19 Lam Son Square, District 1, Ho Chi Minh City
Tel: (84-8) 3823 4999
Website: www.caravellehotel.com

Language
The official language of the conference is English.

Registration, Hospitality & Information Desk
Registration desks are located at the Pre-function Area, Level 3. Desks are open on the following dates and times:

7 May	17:00-19:00 hrs
8 – 10 May	07:00-17:00 hrs

Exhibition Opening Hours

8 May	08:00-17:30
9 May	08:00-18:30
10 May	08:00-17:30

Welcome Reception
All registered participants are invited to the Welcome Reception on Wednesday, 7 May. Official program will be held at the Caravelle Ballroom, Level 3 from 19:00-20:00 followed by a cocktail reception from 20:00-21:30 at Pre-function Area, Level 3.

Refreshments
Morning and afternoon coffee breaks will be served at the Exhibition Area, Level 3 from 10:30-11:00 and 15:30-16:00.

Lunch
Lunch is served at the sponsored symposia rooms only.

Badge
Upon registration, you will receive your badge and conference kits. Please wear your badge during all conference sessions and social events.

Mail/Messages/Medical Assistance/Lost & Found
Please refer to the Registration Desk for assistance.

Sessions
Please make sure to be in session halls on time as all sessions will begin as per schedule. Changes in the program will be announced in the announcement slides inside the session halls.

GENERAL INFORMATION

Speakers' Ready Room
Invited speakers and Free Communication presenters must submit PPT files at least 4 hours prior to your sessions. There will always be a technician available to assist you with any queries you may have in the Speakers' Ready Room located at Dong Khoi I, Level 2:

- Wednesday, 7 May 15:00-18:30
- Thursday, 8 May 07:00-18:30
- Friday, 9 May 07:00-18:30
- Saturday, 10 May 07:00-18:30

Poster Presentations
Posters are displayed as per the poster numbers indicated in the Program. Poster presenters are requested to stand by their posters during coffee breaks. Please refer to the poster set-up and dismantling schedule below. Please remove your posters within the specified dismantling period. The organizers will not be responsible for posters that are not removed on time.

Set-up Schedule		Dismantling Schedule	
Thu, 8 May	07.00-10.00	Sat, 10 May	16.00-17.30

Internet
Free WIFI is available to all registered delegates.

Certificate of Attendance
Please claim your Certificate of Attendance from the registration counter from Friday, May 9, 15:00 hrs onwards.

Tours for Accompanying Persons
Registered accompanying persons are entitled to a one-day tour of their choice. If you haven't done so before coming to the conferece, please sign up for your desired tour program at the Registration Desk.

Liability and Insurance
The Conference Secretariat and Organizers cannot accept liability for personal accidents or loss of or damage to private property of participants and accompanying persons. Participants are advised to take out their own personal travel and health insurance for their trip.

Smoking Policy
Smoking is not allowed inside the session halls, exhibition area, and restrooms. Your compliance is appreciated.

GENERAL INFORMATION

ATM & Credit Cards
ATM are available in many public areas around Ho Chi Minh. All major establishments accept American Express, Diners Club, Mastercard and Visa cards. Expect surcharges to apply.

Climate
May is officially the first month of rainy season in Ho Chi Minh City that lasts for seven months (from May till November). The weather is quite hot, and occasional pouring rains make umbrella and raincoat are good companions these days. Getting out of the crowded city and relax in the suburban area with lush trees and cool atmosphere is so great in hot days. Average May temperature: 30 °C

Clothing
Casual/informal on all occasions.

Dialing Code
To make an international call from Vietnam, first dial the IDD, then the country code. The Vietnam international phone code is 84.

Important!
Program is correct at time of printing. Any changes will be announced onsite.

Congress Secretariat:
Please do not hesitate to contact the secretariat should you require any additional information or assistance.

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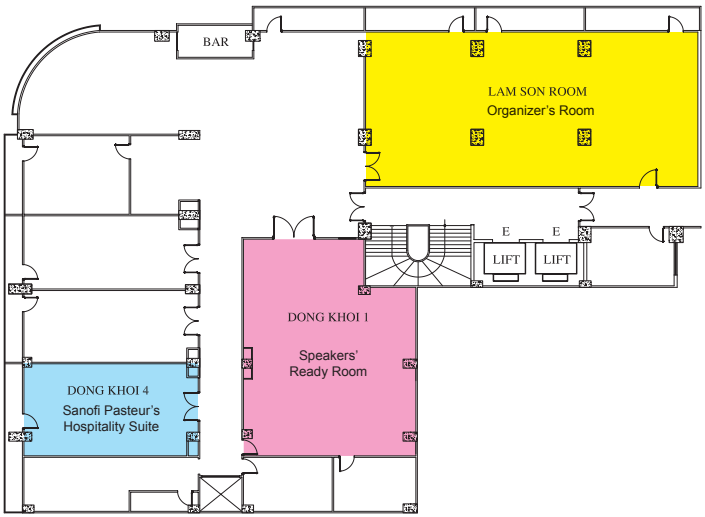
VENUE FLOOR PLAN

Level 2, Caravelle Hotel



Level 3, Caravelle Hotel

PROGRAM-AT-A-GLANCE

WEDNESDAY, 7 MAY 2014

TIME	PROGRAM
17:00-19:00	Registration
19:00-21:00	Welcome Reception Program (followed by cocktails) - Ballroom

THURSDAY, 8 MAY 2014

TIME	BALLROOM	OPERA I	OPERA III & IV
08:00-09:00	Opening Ceremony		
09:00-10:30	P01: Emerging vector-borne infections		
10:30-11:00	Coffee Break / Poster Session (Pre-function Area/Opera II, Level 3)		
11:00-12:30	S01: Malaria - still challenging in 2014	WS01: Practical tips for travelers	FC01: Regional Issues
12:30-14:00	Sanofi Pasteur Sponsored Lunch Symposium		
14:00-15:30	S02: Rabies	WS02: Update on international travel recommendations	ABC01: Malaria
15:30-16:00	Coffee Break / Poster Session (Pre-function Area/Opera II, Level 3)		
16:00-17:30	S03: Mountain & wilderness medicine	D01: Vietnam and Cambodia	FC02: Pre-Travel and VPDs

Program Legend:

P:	Plenary Lecture
S:	Symposium
FC:	Free Communication (Oral Presentation)
MP:	Meet-The-Professor
WS:	Workshop
ABC:	ABC Workshop
D:	Destination Workshop

PROGRAM-AT-A-GLANCE

FRIDAY, 9 MAY 2014

TIME	BALLROOM	OPERA I	OPERA III & IV
08:00-08:50		MP01: Clinical cases from the National Hospital of Tropical Disease	
09:00-10:30	P02: Re-emerging diseases and travel		
10:30-11:00	Coffee Break / Poster Session (Pre-function Area/Opera II, Level 3)		
11:00-12:30	S04: Diagnosing the ill traveler	Nurses' session	FC03: During and Post-Travel
12:30-14:00	GSK Sponsored Lunch Symposium		
14:00-15:30	S05: Practical management issues for traveler vaccination	WS03: Vulnerable traveler populations	ABC02: Running a travel clinic
15:30-16:00	Coffee Break / Poster Session (Pre-function Area/Opera II, Level 3)		
16:00-17:30	S06: Social issues related to travel	Panel Discussion: Fever in locals and travelers	D02: Southern Africa
17:30-18:30	MP02: History of malaria drug development		

Program Legend:

P:	Plenary Lecture
S:	Symposium
FC:	Free Communication (Oral Presentation)
MP:	Meet-The-Professor
WS:	Workshop
ABC:	ABC Workshop
D:	Destination Workshop

PROGRAM-AT-A-GLANCE

SATURDAY, 10 MAY 2014

TIME	BALLROOM	OPERA I	OPERA III & IV
08:00-08:50		MP03: Top papers in the travel medicine literature	
09:00-10:30	P03: Emerging health impacts: environmental, population and economic changes		
10:30-11:00	Coffee Break / Poster Session (Pre-function Area/Opera II, Level 3)		
11:00-12:30	S07: Regional infections	D03: India	FC04: Late-breakers
12:30-14:00	Family Medical Practice Sponsored Lunch Symposium		
14:00-15:30	S08: Expatriates, humanitarian aid and occupational travel	WS04: Practical management issues of traveler's diarrhea	ABC03: Vaccines
15:30-16:00	Coffee Break / Poster Session (Pre-function Area/Opera II, Level 3)		
16:00-17:00	P04: One Health		
17:00-17:30	Closing Ceremony		

Program Legend:

P:	Plenary Lecture
S:	Symposium
FC:	Free Communication (Oral Presentation)
MP:	Meet-The-Professor
WS:	Workshop
ABC:	ABC Workshop
D:	Destination Workshop

POSTER PRESENTATIONS

Poster presenters are requested to stand by their posters during coffee breaks all throughout the conference to answer queries from other delegates. Set-up and dismantling schedule are as indicated below. The organisers have the right to dispose of posters that are left on boards after the dismantling period.

Set-up Schedule
Thursday, 8 May: 07.00-10.00

Dismantling Schedule
Saturday, 10 May: 16.00-17.30

Posters are arranged according to the following topics:

Topic	Poster No.
Pre-Travel Management	P01 - P02
Post-Travel Management, Returning Travelers	P03 - P09
Vaccines & Immunizations	P10 - P15
Epidemiology of Infectious Diseases, Surveillance	P16 - P41
Malaria and Malaria Prophylaxis	P42 - P47
Non-Infectious Risks including Trauma, Accidents, Security	P48
Specific Travelers: Migrants, Refugees, Expatriates, Co-morbid illness	P49 - P52
Region-specific Issues	P53 - P57
Other Travel Related Topics	P58 - P65

SCIENTIFIC PROGRAM

Thursday, 8 May 2014

Thursday, 8 May 2014

Opening Ceremony

08:00 - 09:00 Ballroom

Plenary 1: Emerging vector-borne infections

09:00 - 10:30 Ballroom

Chairs: K. Kain (Canada) 1
R. Steffen (Switzerland) 2

09:00 **Emerging viruses - From Alpha to Zika** 3
P.A. Tambyah (Singapore)

09:30 **Dengue - Regional Preparations and Prevention** 4
A. Wilder-Smith (Singapore)

10:00 **Malaria - Progress of Malaria Control and Goals for Elimination** 5
G. Brown (Australia)

Coffee Break

10:30 – 11:00 Pre-function Area

Symposium 1: Malaria - still challenging in 2014

11:00 - 12:30 Ballroom

Chairs: K. Ouchi (Japan) 6
M.P. Grobusch (Netherlands) 7

11:00 **Challenging issues in diagnosis** 8
K. Kain (Canada)

11:30 **Challenging issues in prophylaxis** 9
J.K. Baird (Indonesia)

12:00 **Challenging issues in treatment** 10
T. Hien, N. Thuy-Nhien, N. Nha-Ca, N. Thanh (Vietnam)

Workshop 1: Practical tips for travelers

11:00 - 12:30 Opera I

C. Van Tilburg (USA) 11
N. Zwar (Australia) 12

Free Communication 1: Regional Issues

11:00 - 12:30 Opera III & IV

Chairs: C. Lau (Australia) 13
S. Borwein (Hong Kong, China) 14

11:00 **RABIES ELIMINATION PROGRESS IN BANGLADESH** 15
S. Sohrab Hossain, S. Sohrab Hossain (Bangladesh)

11:15 **PREDICTIVE FACTORS FOR SUCCESSFUL TREATMENT OUTCOMES IN MULTIDRUG AND EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS FROM THE UPPER NORTH OF THAILAND** 16
R. Jaksuwan, J. Settakorn, J. Patumanond, C. Chuchottaworn, P. Kunawararak, P. Tharavichikul, P. Pokaew, S. Chanwong, P. Teerasawad, M. Chayatulachat (Thailand)

11:30 **TUBERCULOSIS AMONG NEWLY ARRIVED FOREIGN SPOUSES PRIOR TO CITIZENSHIP IN TAIWAIN, 2006-2011** 17
M. Kuan, H. Yang, C. Hsu (Taiwan)

11:45 **TRAVEL MEDICINE IN INDONESIA: A TIME FOR RE-APPRAISAL** 18
L.S. Pakasi (Indonesia)

12:00 **CORRELATION BETWEEN MULTI-WAVE DENGUE OUTBREAKS AND CLIMATOLOGICAL EVENTS: A MODELING APPROACH** 19
Y. Hsieh (Taiwan)

12:15 **SOCIO-ENVIRONMENTAL DETERMINANTS TO THE TYPES OF DENGUE IN CEBU CITY, PHILIPPINES** 20
F.E. Edillo, R.J.A. Bacalso, E.D. Reston, R.R.J. Ymbong (Philippines)

Symposium 2: Rabies

14:00 - 15:30 Ballroom

Chairs: W. Piyaphanee (Thailand) 21
P. Parola (France) 22

14:00 **Epidemiology & Travel Risk** 23
P. Gautret (France)

14:30 **Pre and Post Exposure vaccination** 24
T. Tantawichien (Thailand)

15:00 **Remaining Problems in Prevention and Future Developments** 25
H. Wilde (Thailand)

Workshop 2: Update on international travel recommendations

14:00 - 15:30 Opera I

D. Patel (United Kingdom) 26
G. Poumerol (Switzerland) 27
G. Brunette (USA) 28

ABC 1: Malaria

14:00 - 15:30 Opera III & IV

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P.A. Leggat (Australia) 30

Coffee Break

15:30 – 16:00 Pre-function Area

Symposium 3: Mountain & wilderness medicine

16:00 - 17:30 Ballroom

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D. Shlim (USA) 32

16:00 **Altitude illness** 33
B. Basnyat (Nepal)

16:30 **Management of bites and stings** 34
J. Seymour (Australia)

17:00 **Risk and responsibility in adventure travel** 35
C. Van Tilburg (USA)

Destination 1: Vietnam and Cambodia

16:00 - 17:30 Opera I

R. Kot (Vietnam) 36
G. Gossius (Cambodia) 37

Free Communication 2: Pre-Travel and VPDs

16:00 - 17:30 Opera III & IV

SCIENTIFIC PROGRAM

Friday, 9 May 2014

Friday, 9 May 2014

Meet the Professor 1

08:00 - 08:50 — Opera I

Clinical cases from the National Hospital of Tropical Disease 46
K. Nguyen Van (Vietnam)

Plenary 2: Re-emerging diseases and travel

09:00 - 10:30 — Ballroom

Chairs: P.A. Leggat (Australia) 47
J. Cramer (Germany) 48

09:00 **Travelers and the spread of bacterial resistance** 49
G. Thwaites (Vietnam)

09:30 **Travelers and polio** 50
A. Moses (Israel)

10:00 **Travelers and pertussis** 51
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10:30 – 11:00 — Pre-function Area

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Chairs: Z. Liu (China) 52
M. Haditsch (Austria) 53

11:00 **Viral diseases: Diagnosis of arboviral infection** 54
B. Wills (Vietnam)

11:30 **Bacterial diseases: Diagnosis of travel-associated enteric fever and GI infections** 55
A. Haque (Pakistan)

12:00 **Parasitic diseases: Stool, blood and tissue PCR for the diagnosis of parasitic disease** 56
R.S. Bradbury (Australia)

Nurses' session

11:00 - 12:30 Opera I

Chairs: C. Wong (New Zealand) 57
L. Ramsey (Australia) 58

11:00 **The nurses role in travel medicine** 59
S. Hall, I. Bauer, N. Sato (United Kingdom)

11:45 **The nurses role at the International SOS clinic** 60
S. Bautovich, C. Chinh Tran Huy, H. Hang Le Thuy (Vietnam)

Free Communication 3: During and Post-Travel

11:00 - 12:30 Opera III & IV

Symposium 5: Practical management issues for traveler vaccination

14:00 - 15:30 Ballroom

Workshop 3: Vulnerable traveler populations

14:00 - 15:30 Opera I

ABC 2: Running a travel clinic

14:00 - 15:30 Opera III & IV

Coffee Break

15:30 – 16:00 Pre-function Area

Symposium 6: Social issues related to travel

16:00 - 17:30 Ballroom

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L. Loutan (Switzerland) 79

16:00 **Social media and travel** 80
D. Mills (Australia)

16:30 **Social safety and travel** 81
M. Shaw (New Zealand)

17:00 **Social conscience and voluntourism** 82
S. Hall (United Kingdom)

Panel Discussion: Fever in locals and travelers

16:00 - 17:30 Opera I

J. Torresi (Australia) 83
J. Cramer (Germany) 84
P. Rupali-Velore (India) 85
P. Parola (France) 86
J. Whitehorn (Vietnam) 87
P. Chanthavanich (Thailand) 88

Moderated by Prof. Eli Schwartz (Israel)

Destination 2: Southern Africa

16:00 - 17:30 Opera III & IV

Meet the Professor 2

17:30 - 18:30 Ballroom

SCIENTIFIC PROGRAM

Saturday, 10 May 2014

Saturday, 10 May 2014

Meet the Professor 3

08:00 - 08:50 Opera I

Top Papers in the travel medicine literature 92
L. Chen (USA)

Plenary 3: Emerging health impacts: environmental, population and economic changes

09:00 - 10:30 Ballroom

Chairs: P. Chanthavanich (Thailand) 93
T. Gherardin (Australia) 94

09:00 **Environmental changes** 95
A. Woodward (New Zealand)

09:30 **Population changes** 96
L. Loutan (Switzerland)

10:00 **Financial aid** 97
A. Magill (USA)

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10:30 - 11:00 Pre-Function Area

Symposium 7: Regional infections

11:00 - 12:30 Ballroom

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G. Brink (South Africa) 99

11:00 **Rickettsia** 100
J. Simon (Hong Kong, China)

11:30 **HFMD/EV71** 101
P. Lee (Taiwan)

12:00 **Melioidosis** 102
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Destination 3: India

11:00 - 12:30 Opera I

T. Gherardin (Australia) 103
P. Rupali-Velore (India) 104

Free Communication 4: Late-breakers

11:00 - 12:30 Opera III & IV

Chairs: M. Starr (Australia) 105
J. Cohen (Australia) 106

11:00 **MEDICAL AID WORK IN THE PHILIPPINES AFTER TYPHOON "YOLANDA" – LESSON LEARNED BY THE ISRAELI DEFENCE FORCES MEDICAL DELEGATION** 107
Y. Paran, G. Levy (Israel)

11:20 **MEASLES IN A VFR TRAVELER: SINGAPORE EX-PHILIPPINES** 108
L. Chuang, S.Y. Yap, S. Pathak, L. Cui, P.U. Krishnan, P.L. Lim (Singapore)

11:40 **EMERGING ISSUES IN TB IN VIETNAM AND ASIA-PACIFIC REGION** 110
N.D. Bang (Vietnam)

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14:00 - 15:30 Ballroom

Chairs: S. Hall (United Kingdom) 111
A. De Frey (South Africa) 112

14:00 **Preparing and managing the expatriate/missionary** 113
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14:30 **Challenges of supporting those who travel for work** 114
D. Patel (United Kingdom)

15:00 **Humanitarian aid to developing countries: management while on deployment** 115
R. Garrigue, P. Phi TRUONG Hoang Phu, H. Hai LUU Viet, H. Hach Nguyen Huu, H. Mangon, G. Blanc, P. Barrault (Vietnam)

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14:00 - 15:30 Opera I

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P. Pandey (Nepal)	117

ABC 3: Vaccines

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Coffee Break

15:30 - 16:00 Pre-Function Area

Plenary 4: One Health

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Chairs: K. Leder (Australia) 120
E. Schwartz (Israel) 121

16:00 **One Health & travel** 122
R. Steffen (Switzerland)

16:30 **One Health & emerging infections** 123
R. van Doorn (Vietnam)

Closing Ceremony

17:00 - 17:30 Ballroom

SPONSORED SYMPOSIA

Thursday, 8 May 2014

Sanofi Pasteur Sponsored Lunch Symposium
Little bites, big problems

12:30 – 14:00 Ballroom

Chairs: A. Forbe (Australia)
T.T Hien (Vietnam)

12:30 **Welcome and Introduction of the Speakers**

12:35 **Mosquito bites: Japanese Encephalitis**
J. Torresi (Australia)

13:00 **Mosquito bites: Yellow Fever**
J. Visser (New Zealand)

13:25 **Cocktail nibbles: Hepatitis A and Typhoid Fever**
J. Santos (Philippines)

13:50 **Open Forum**

Friday, 9 May 2014

GSK Sponsored Lunch Symposium
Cumulative risk assessment in various traveller populations

12:30 – 14:00 Ballroom

12:30 **Welcome and Introduction**

12:40 **Arguments for cumulative risk analysis in travellers**
K. Leder (Australia)

13:00 **Importance of prevention and vaccination in travel medicine**
L. Bravo (Philippines)

13:20 **Interactive discussion & practical case studies:**
Which vaccines would you recommend for this traveller?
K. Leder (Australia)

Clinical scenarios for the travellers
L. Bravo (Philippines)

Saturday, 10 May 2014

Family Medical Practice Sponsored Lunch Symposium
The different faces of Vietnam

12:30 - 14:00 Ballroom

12:30 **Distribution of lunch**
12:45 **The cultural history of Vietnam**
N.N. Tho (Vietnam)
13:15 **Medical mission in rural Vietnam**
R. Kot (Vietnam)
13:45 **Questions & Answers**

POSTER SESSION

Poster Session

Poster No.		Ref. No.
P12	**ADULT VACCINATION PROFILE AMONG MEDICAL CHECK-UP PATIENTS IN A PRIVATE HOSPITAL IN JAKARTA** L.S. Pakasi, E. Nelwan (Indonesia)	135
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ABSTRACTS

Plenary 1: Emerging vector-borne infections

3
APTHC-0797
Emerging viruses - From Alpha to Zika

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Emerging viral infections have had a significant impact on the Asia Pacific region. From the Nipah virus which inspired the movie "Contagion" and caused significant morbidity and mortality in Singapore and Malaysia through the SARS epidemic which was described by Singapore's Prime Minister as a "Defining moment" in the nation's history. Today, there are many unknowns associated with the H7N9 and H10N8 avian origin influenza viruses as well as the MERS Coronavirus. But while these major viruses hog the headlines, there are also less well known epidemics of chikungunya, zika virus and other emerging pathogens. The rapidly changing human-animal interface due to encroachment into wildlife areas as well as the industrialisation of agriculture are believed to have contributed to the rapid emergence of these viruses. After the SARS experience, the WHO has fortunately been less quick to impose travel restrictions as they seem to have had more adverse consequences than benefits. The challenge for travel medicine practitioners it to keep up to date on novel emerging viral pathogens so that we can provide practical, safe and realistic travel advice in the face of these emerging threats.

4
APTHC-0826
Dengue - Regional Preparations and Prevention

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The global dengue problem is worsening. Dengue, a mosquito-borne viral infection, is currently regarded as the most important arboviral disease internationally. Recent mapping of global dengue incidence suggests an upper bound total of 3.97 billion people living in 128 countries are at risk of dengue globally, 824 million urban areas and 763 million in peri-urban areas. Using modeling approaches that include inapparent and apparent infections the estimated number of annual dengue infections is 390 million. Because of the increasing incidence and geographic expansion and socio-economic burden, a vaccine against dengue is urgently needed.

Dengue vaccines have been in development for over 50 years. Several vaccine technologies have been applied, including live attenuated virus, purified inactivated virus, recombinant subunits, virus-like particles and plasmid or viral vectors. Each of these approaches have their distinct advantages and disadvantages, and all are at different stages of development.

Major scientific challenges have slowed down the development: lack of an animal model, lack of a known immune correlate, lack of understanding of the contribution of neutralizing antibodies to protection, the fear of immune enhancement, lack of understanding of the most suitable target epitopes for vaccines, unknown role of non-structural proteins such as NS1 in dengue immunity, and viral interference of tetravalent combinations. Of the many dengue vaccine candidates, only the live-attenuated tetravalent, chimeric dengue-yellow fever vaccine developed by Sanofi Pasteur (CYD) has reached Phase 2b and Phase 3 clinical trials. However, the available first efficacy results of CYD have been disappointing, and many lessons need to be learnt from this failure. Dengue vaccine introduction will in itself not be the only strategy to combat dengue. It needs to be a “public health package” that includes vector control, community based interventions to reduce breeding sites, better surveillance, and reducing the case fatality rate by improving case management.

5
APTHC-0823
Malaria - Progress of Malaria Control and Goals for Elimination

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The last two decades have witnessed major reductions in morbidity and mortality from malaria, largely as a result of increased investment for known effective interventions such as distribution of insecticide-treated bednets, greater availability of rapid diagnostic tests, indoor residual spraying, and seasonal malaria chemoprophylaxis. The current approach of “Test, Treat, Track” summarises the key aspects of effective clinical management combined with surveillance that should lead to more effective prevention.

With increased control and reduced disease burden, many are looking at the possibility of elimination, particularly in the Asia Pacific region. Compared with Africa, this region confronts particular challenges related to artemisinin resistance, outdoor biting mosquitoes, and the difficulties of eradicating hyponozoites of *P.vivax* .

The Roll Back Malaria Partnership, the Asia Pacific Malaria Elimination Network and the Asia Pacific Leaders Malaria Alliance, are all engaged in aspects of the quest for malaria control, a task not made easier by factors such as emerging insecticide resistance, antimalarial drug resistance, counterfeit drugs, and inadequate financing for the people and the resources to maintain the required programmes.

Symposium 1: Malaria - still challenging in 2014

8
APTHC-0805
Challenging issues in diagnosis

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This presentation will review new and old diagnostic strategies for malaria including microscopy, rapid diagnostics tests (RDTs) and molecular-based approaches. It will discuss the relative advantages and limitations of these older methods and detail the next generation of diagnostics with the potential to transform how we manage febrile syndromes in low resource settings.

9
APTHC-0828
Challenging issues in prophylaxis

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Malaria remains a threat to travelers through much of theAsia Pacific region. All four human species of the parasitic plasmodia occurhere, along with the quite dangerous “fifth” cause of malaria in humans, thezoonosis caused by *Plasmodium knowlesi*of Southeast Asia macaques. The region is also today the exclusive domain ofartemisinin-resistant *Plasmodiumfalciparum*, as it is for mefloquine resistant strains as well. Therelatively high risk of infection by *Plasmodiumvivax* imposes particularly difficult issues for providers ofchemoprophylaxis and treatment. This parasite in the Asia Pacific is not onlyprevalent, but also much more likely to be resistant to chloroquine prophylaxisor therapy, it is often not responsive to standard primaquine therapy againstrelapse, and is prone to relapse often, quickly, and multiple times. Theprevention of relapse with primaquine – be it by radical cure of an acuteattack, presumptive post-treatment therapy (also called terminal prophylaxis),or primary prophylaxis – may fail as a consequence of a common mutation tocytochrome P-450 2D6 that disables the metabolism of primaquine

essential toits therapeutic activity. Primaquine applied in its of indications requiresextreme caution against glucose-6-phosphate dehydrogenase deficiency, alongwith avoidance of dosing pregnant women. The provider consideringchemoprophylaxis advice for patients traveling in the region faces a complex web of technicalconsiderations involving all five species, extreme heterogeneity of geographicrisk, unique drug resistance issues, and an array of possible contraindicationsor avenues leading to chemoprophylactic failure or serious adverse events. Thislecture aims to identify and explain these issues in order to guide rationaldecision making for malaria chemoprophylaxis in the Asia Pacific.

10
APTHC-0800
Challenging issues in treatment

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Over the past decade, the number of malaria cases has fallen by more than half in 40% of malaria endemic countries, and estimates suggest that nearly 750,000 lives have been saved in Africa alone. But this progress is fragile; one of the major threats to sustained malaria control and elimination is the emergence of “resistance” malaria parasites - defined currently by slow parasite clearance following treatment with artemisinin or derivatives.

The World Health Organization (WHO) recommended several artemisinin based combination therapies (ACTs) to *P.falciparum* as artemether-lumefantrine (AL), artesunate-amodiaquine (AA), artesunate-mefloquine (AM), artesunate-sulfadoxine-pirymethamine (ASP) but dihydroartemisinin-piperaquine (DP) is the most strongly recommended fixed-dose ACT thanks to its safety, simplicity in administration, and possible post treatment prophylactic effect. DP has also been recommended for *P. vivax* malaria, not only for chloroquine resistance areas but for areas where the drug remains effective and that may allow for simplified protocols for treating all forms of malaria with ACTs.

In *falciparum* treatment failures, the practical solution is prolonged 6 day course, but we should seek newer ACTs as artesunate-pyronaridine (AP), artemisinin-naphthoquine (AN) or non-artemisinin compounds OZ439 or KAE609.

Parenteral artesunate is the drug of choice for severe malaria but delayed hemolysis has been reported. However, there is insufficient evidence to link these reported hemolysis cases directly to artesunate, and we should emphasize that this adverse event should not be consider as a contre-indication of parenteral artesunate, which is the unique lifesaving drug for patients with severe malaria.

Regarding the prevention of relapse in *P.vivax* infections, ongoing studies would answer whether the short course regimen of primaquine is as effective as the 14 day regimen and how to manage patient with G6PD deficiency. The long acting 8-aminoquinoline (Tafenoquine) would be a promising candidate for radical cure for vivax patients worldwide.

Workshop 1: Practical tips for travelers

11
APTHC-0716
Practical tips for travelers

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WATER PURIFICATION

Safe Drinking Water

200 million urban dwellers
Accounts for 10-25 million deaths per year
1 billion cases of diarrhea per year

95% of deaths in children under 5-years old (in undeveloped areas)
Travelers Diarrhea

Best options: chemical
Chlorine dioxide or iodine
Other options
Solar: 6 hours direct sunlight days cloudy
Steripen
Battery operated
50 liters before recharging
Filter?
Water Purification: Bring to rolling boil (1 minute), Longer at lower temperatures
Pasteurization

SURVIVAL AND MEDICAL KITS
Clothing!
Seek shelter!
Drink lukewarm sugar fluids!
Replace wet socks/gloves/clothing
Hat/balacalava
Insulate from ground!
Keep active
Heat packs on groin, axilla, chest

At all times carry:
Passport
Cash
Phone + charger
Medical license
Passport data page
Embassy contact info
Airport / transportation contact info

Pack Light
Sleep sack
Rain gear/umbrella
Travel friendly clothing

Sturdy footwear
Hat/gloves/glasses

Medical supplies
First aid tape
CPR mask, pocket-size, and gloves
Self-adhering elastic bandage
Blister bandage
Steristrips + mastisol
Povidone-iodine pads
Benzalkonium chloride wipes
Irrigation syringe
Gauze, bio-occlusive dressing

Safety Gear
Headlight w extra batteries
Perlon cord
Silk sleep sack (permethrin)
Sunscreen + lip balm
Water purification tablets
Insect repellent (DEET)
Earplugs/eyeshade
Sun hat/bandanna (permethrin)
Antibacterial towlettes
Hand Sanitizer
Duct Tape

Consider for austere locals
Multi-tool
Safety pins
Plastic cable ties
Polyurethane straps
Oral hydration packs
Chemical heat packs
Map, compass, GPS
Whistle

Medications
Ibuprofen

Acetaminophen
Imodium
Benadryl
Pepto Bismol
Azithromycine
Ciprofloxacin
Ondanzatron
Dexamethasone
Tobradex
Epinephrine
*Malarone
*opiate analgesic

Smart Phone
International Text/Data/Phone plan
Get Local SIM Card
Digital books
Scan important documents
Skype/Facetime
Power supply
Converter/plug
Solar or Dynamo charger
Options
Satellite phone
VHF/UHF Radio (Ham)

Emergency abroad
Travel medicine apt often at last minute
Travel documents
Medical documents
Cash/credit card
Consulate info
Hospital info
Evacuation plan
Medical Credentials

12
APTHC-0735
Practical tips for travelers

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This workshop will provide a practical approach to two important issues of air travel – jet lag and the risk of deep vein thrombosis. The workshop will discuss strategies for minimizing jet lag and options for management including pharmacological therapies including melatonin use and light exposure. The risks for travel-related Deep Vein Thrombosis will be reviewed and preventive measures discussed, including use of anti-coagulants in high risk travelers. The current evidence of effectiveness of oral anti-coagulants will be part of this discussion.
Water purfication options will review chemical (chlorine, iodine), thermal (boiling), UV light (electronic, sunlight), and filters. An emphasis will focus on light, practical and inexpensive purification for a variety of situations such as personal travel, business travel, military, expeditions and medical relief to developing countries. Survival and Medical kits will discuss an overview of recommend items for lay travelers and medical personnel. Preparing a kit will entail medical supplies, safety gear, and electronics. A review of procedures for an emergency in a austere, remote or urban location will be discussed.

Free Communication 1: Regional Issues

15
APTHC-0792
RABIES ELIMINATION PROGRESS IN BANGLADESH

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Mass dog vaccination campaign

Mass dog vaccination coverage:

Division/district	Year	Number of Districts	Round of MDV	Dogs counted	Dogs vaccinated	Coverage (%)
Cox's Bazaar	2011	1	1st	4,500	3,285	73.0
Satkhira	2012	1			1,245	
Rangpur		8		10,784	9,001	83.5
Rajshahi		8		15,974	13,632	85.3
Sylhet		3		1,658	1,513	91.3
Dhaka		17		25,257	21,554	85.3
Cox's Bazaar		1	2nd	5,000	4,315	86.3
Khulna	2013	8	1st (2nd in Satkhira)	9,806	8,826	90.0
Chittagong		8	1st	8,455	7,263	85.9

Rabies death record:

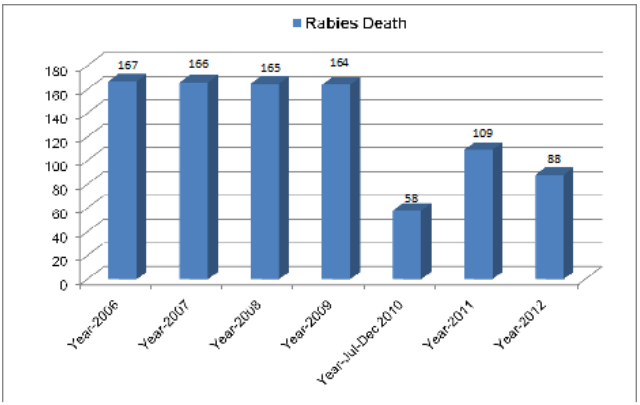

Figure: Rabies Death Status of different Year as recorded in Infectious Diseases Hospital, Dhaka, Bangladesh

RABIES ELIMINATION PROGRESS IN BANGLADESH

Rabies is the one of the most dreadfull ancient zoonotic disease. Rate of rabies incidence is very high in Bangladesh. Every year >2000 people die of rabies and 200000--300000 people take post exposure prophylaxis.Among the rabies victims >50% are children < 15 years and 88% are rural peopl.From the year 2010 Government started to provide high priority to the problem. The Government fixed up the goal to eliminate rabies by 2020 adopting following measures

(1)Public awareness building: Bangladesh government has taken steps to develop public awareness through social mobilization program like advocacy meeting, seminar, symposium,press conference and celebration of World Rabies Day and World Veterinary Day.

(2) Dog Bite Management Service: Rabies is 100% vaccine preventable disease and department of Health has set up 65 dog bite management centres to provide post exposure treatment to all dog bite victims at free of cost with cell culture vaccine using intradermal regimens. Local government Ministry provided financial support to 310 municiplities for immunization of the dog bite victims in the year 2011&2013.

(3)Development of rabies free dog population: 98% cases of rabies occur from dog. So Government has decided to develop rabies free dog population conducting Mass Dog Vaccination (MDV) program. Department of Health, Livestock and Local Government has conducted MDV in 54 municipalities within 2011-2013.

(4)Conduction of Dog population Management Program: The high endemicity of stray dog causes maximum exposure of rabies in Bangladesh. The Government has decided to implement dog population management program over the country and many NGOs like WASPA, Oie, Rabies in Asia Foundation,has come foroward to work in this area.

Analysis of rabies incidence report recorded in Infectious Disease Hospital, Dhaka shows the decreasing rate of rabies incidence that indicates the successfull progress of recently taken rabies elimination initiatives in Bangladesh.

16
APTHC-0723
PREDICTIVE FACTORS FOR SUCCESSFUL TREATMENT OUTCOMES IN MULTIDRUG- AND EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS FROM THE UPPER NORTH OF THAILAND

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Extensive drug-resistant tuberculosis (XDR-TB) is a form of TB caused by organisms resistant to all most effective anti-TB drugs, emerged through management of multidrug-resistant tuberculosis (MDR-TB) treatments, and can spread from one person to another. The purpose of this study is to explore factors influencing successful treatment outcome in MDR/XDR-TB. This is a retrospective cohort study of new MDR/XDR-TB patients who had TB culture and drug susceptibility test results from 2005 to 2011 at the Office of Disease Prevention and Control 10. The patients received anti-TB treatment at government hospitals in upper north of Thailand. Data were retrieved from hospital chart and telephone communication. Potential factors associated with successful treatment outcomes were analysed using univariable analysis with exact-test, and multivariable analysis with logistic regression. Among 161 cases, 86.3% were MDR-TB, 10.6% were Pre-XDR-TB, and 3.1% were XDR-TB. Seventy-one out of 161 patients (44.1%) experienced successful treatment, including 42.9% cured and 1.2% complete cases. Ninety patients (55.9%) had non-successful treatment outcomes, consisting of 19.9% default, 5.6% failure, 27.9% dead (including dead before started treatment), and 2.5% transferred out cases. In multivariable logistic regression analysis, successful treatment outcomes were associated with minor adverse drug reactions (OR, 4.11; 95% CI, 1.06-16.01, p=0.041), group drug 3 treatment (OR, 7.12; 95% CI, 1.26-40.26, p=0.026), group drug 4 treatment (OR, 0.02; 95% CI, 0.00-0.28, p=0.003), 12-18 months treatment (OR, 24.41; 95% CI, 4.45-133.92, p<0.001), and more than 18 months treatment (OR, 168.12; 95% CI, 27.86-

1014.36, p<0.001) Among MDR/XDR-TB patients in upper north of Thailand, receiving group 3 drug regimens (Ofloxacin) and treatment more than 12 months are the strong predictive factors for successful treatment outcomes. In addition, experiencing minor adverse drug reactions may also point to successful treatment. While receiving group 4 drug regimens (Ethionamide and Cyclocerine) is a risk factor for non-successful treatment outcomes.

17
APTHC-0740
TUBERCULOSIS AMONG NEWLY ARRIVED FOREIGN SPOUSES PRIOR TO CITIZENSHIP IN TAIWAIN, 2006-2011

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Background: Taiwan's criteria for new-immigrant admissions is chest-autoradiograph normal. A subsequent TB screening for new foreign spouses is mandatory prior to acquiring citizenship.

Objectives: This study is aimed to estimate the tuberculosis burden among new-entry foreign spouses and their close contacts.

Methods: By analysis a nationwide surveillance database, we assessed the TB relative risk of foreign spouses within newly arrived 4-6 years vs. indigenous cases of corresponding age and analysis TB prevalence among their underling close contacts.

Results: 94.0% (721/768) of new foreign spouses with Tuberculosis (TB), of whom 98.6% were female, had come from South-East Asia nations (Vietnam, Indonesia, Philippines and Thailand) or China. TB rates (40.3-176.2 per 10^5/year) among newly emigrant wives aged 20-49 were 1.7- to 7.3-fold higher than those of Taiwanese females of corresponding ages. Additionally, TB prevalence among the 2,698 close contacts of 768 foreign-spouse index cases was 1.2% via a 2-year-follow-up based investigation. Regarding laboratory diagnostics, 87.89 (675/768) or 11.1% (85/768) of all TB cases were diagnosed as abnormal radiographs or normal radiographs which were later

diagnosed as negative-smear/positive-culture encompassing respectively 35.4% (239/675) or 14.1% (12/85).

Conclusions: Foreign wives from endemic countries and their close contacts, had a relatively high TB risk. An regular annual TB screening for new-entrants within first-2-year from TB endemic regions is recommend, rather than being delayed until the application for citizenship. Reconsidering a more sensitive TB test could facilitate rapid diagnosis.

18
APTHC-0729
TRAVEL MEDICINE IN INDONESIA: A TIME FOR RE-APPRAISAL

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Indonesia is a developing tropical country, which is considered as an exotic destination, yet possesses some health risks. The archipelago consists of >17,000 islands and spans 5120 km (west to east) and 1760 km (north to south). With around 237 million inhabitants, there were only about 7.5 million outbound travellers, but more than 240 million domestic travels.

More than 80% of outbound travel was to Malaysia or Singapore, which have no increased health risk. The most prominent travel risk figure is the Hajj pilgrimage to Saudi Arabia. Every year, >200,000 Indonesians go to Mecca. On average, there were 411 deaths between 2010 and 2012 Hajj season, mostly due to cardiovascular event and pneumonia.

Many Indonesians will travel to their hometown for celebrating holidays, especially around the Eid al-Fitr Festival, yearly. This kind of 'domestic' visiting friends and relatives (VFR) was associated with 3200 road accidents and 672 deaths, on average, between 2009 and 2012.

A dedicated pre-travel clinic is barely found in Indonesia. General practitioners and pediatricians provide routine childhood vaccinations. Indonesian adult immunization schedule includes more than a dozen vaccine products, including influenza, hepatitis A, and typhoid, the typical Western travel vaccines. Only port health officers authorize yellow fever and meningitis shots.

Most travel clinics are found in tourism areas providing only treatment for visitors.

To conclude, international travel health is increasingly an important issue. However, travel medicine in Indonesia was none close to the Western's type. Intraregional travels to countries with similar health risk profile are probably safe and do not require special preventive measures. While being an endemic country for many vaccine-preventable diseases, many Indonesians are vaccinated without necessarily traveling anywhere. In this regards, the purpose of travel medicine should be re-evaluate and re-appraise to find their existence in Indonesia, or other developing countries as well.

19
APTHC-0781
CORRELATION BETWEEN MULTI-WAVE DENGUE OUTBREAKS AND CLIMATOLOGICAL EVENTS: A MODELING APPROACH

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Objective of study
To ascertain the correlation between dengue outbreaks and climatological events, in particular relating to the occurrence of multi-wave outbreaks. The study will be illustrated with case studies of past multi-wave outbreaks in Taiwan and Cuba.

Method
A simple mathematical model, the Richards model, is proposed to elucidate the temporal changes that occur during an outbreak. Furthermore, statistical correlation analysis is performed to determine the most significant correlations between the time series of dengue incidence and climatological indicators such as temperature and precipitation.

Conclusions
Multiple turning points of multi-wave dengue outbreaks were pinpointed, when drastic weather changes in the form of typhoon (in Taiwan) and hurricane (in Cuba) was found to play a role in the occurrence of multiple waves of dengue cases. Furthermore, correlation analysis of 2007 Taiwan dengue outbreak

indicates a correlation with lags of 5-7 weeks between dengue case number and climate time series. The study illustrates the potential impact of climatological events on infectious disease spread, further highlighting the need to be well-prepared, especially in travel, for potentially worsening disease spread in the aftermath of natural disasters such as hurricanes/typhoons.

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20
APTHC-0711
SOCIO-ENVIRONMENTAL DETERMINANTS TO THE TYPES OF DENGUE IN CEBU CITY, PHILIPPINES

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Dengue is a pervasive infectious disease in the Philippines. This study determined the relationships between socio-environmental determinants and patients' types of dengue (dengue fever [DF] and dengue hemorrhagic fever [DHF]) in four randomly selected sites among the top ten sites with highest case fatality rate of dengue in Cebu City, Philippines. This retrospective study determined the associations between social (individual-level) or environmental (household-level) determinants and the patients' types of dengue in January 2012-August 2013 recorded by Cebu City Health Department by using questionnaires and interviews to patients' primary caregivers (n=187; 90.7% power). Case definition is based on the Manual of Procedures for the Philippine Integrated Disease Surveillance and Response in accordance to the revised international health regulations of the World Health Organization. Based on univariate analyses, female caregivers with at most high school education and

low income were associated (p<0.05) with DHF patients; those with college education, DF patients. DHF patients' caregivers were associated (p<0.05) with unscreened houses, non-use of insecticides, and awareness of discarded cans, flower vases and bamboo stumps as *Aedes* breeding sites. DF patients' caregivers were associated with non-awareness of banana leaf axils as such, and skin rash as dengue symptom (p<0.05). Multivariate analysis showed that female caregivers of DHF patients had low income; those of DF patients were unaware of banana leaf axils as breeding sites and skin rash as a symptom. Not joining any anti-dengue environmental program was associated with DF patients. Better management of dengue control is discussed.

Symposium 2: Rabies

23
APTHC-0804
Epidemiology & Travel Risk

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Rabies remains a neglected tropical disease in many countries. Most cases are reported from Asia, notably from India and China, and from Africa. In Asia, the rabies endemicity is very variable according to countries. Most cases of rabies in travelers are associated with dog bites, occur in adults who are commonly migrants. The cases are not necessarily associated with long-term travel or expatriation to endemic countries; moreover, cases are observed in travelers after short trips of two weeks or less. Cases from India and Philippines are frequent. In a significant proportion of cases, diagnosis is challenging, with multiple missed diagnoses and transfers from ward to ward before the final diagnosis of rabies. The incidence of injuries to travelers caused by potentially rabid animals is approximately 0.4% per month of stay. Dogs account for 51% of cases, but non-human primates are the leading animals responsible for injuries in travelers returning from Southeast Asia. Travel to Southeast Asia, India and North Africa, young age, and traveling for tourism are risk factors for potential exposure.

24
APTHC-0796
Pre and Post Exposure vaccination

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The human rabies has decreased in developed countries because of mandatory vaccination of all domestic animals. However, inappropriate dog vaccination, limited access to the vaccination, and shortage in supply of rabies immunoglobulin (RIG) remain major problems in developing countries. Prevention of rabies depends on a combination of interventions, including post-exposure prophylaxis (PEP) to potentially exposed patients, pre-exposure prophylaxis (PrEP) of people at frequent risk of exposure, control of infection in animal reservoirs and control of stray dogs. PEP is a very effective method of preventing the rabies infection in an exposed individual, on the condition that it is done properly and on time, according to WHO guidelines. PEP consisting of wound care, infiltration of RIG and vaccination is recommended for all persons with rabies exposure. Attempts to reduce costs of PEP by lowering vaccine volume and reducing clinic visits have produced several vaccine regimen. This rationale would not only reduce costs but help increase compliance with the complete PEP. In order to decrease the cost of PEP, intradermal route for rabies vaccine administration should advantageously replace PEP using brain-tissue vaccines in developing countries. However, perhaps one of the most substantial improvements in rabies PEP in many developing countries has been the use of the two-site intradermal regimen (2-2-2-0-2-0) with cell-culture rabies vaccine (Thai Red Cross regimen). PrEP for travelers are not designed to provide long-term protection but to better induce protective immune response that can be boosted after exposure to a rabid animal, so PrEP is a medical decision that must be individualized for travelers and is made through personal travel destination, itinerary, behavior, duration of trip, and vaccine cost. PrEP does simplify PEP, although it does not abrogate the need for booster vaccination after rabies exposure. WHO recommends two booster doses of vaccine (intramuscularly or intradermally) administered on days 0 and 3 or four 0.1-mL doses of vaccines given intradermally on day 0 for pre-immunized individuals who are later exposed to rabies.

25
APTHC-0799
Remaining Problems in Prevention and Future Developments

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Rabies is still expanding its range in Asia and Pacific Islands. Previously free Pacific Islands are experiencing new outbreaks. Rabies bats may well be a worldwide problem. Improvements in vaccines and immunoglobulins, as well as evidence- based overdue modifications in pre- and post-exposure prophylaxis have been developed. Some are now WHO and US-CDC approved. They simplify and more affordable the complex and lengthy former vaccination schedules. There have been some reductions in worldwide rabies deaths, but they are still considered well above the reported 55,000 annually and grossly under-reported. Almost all human deaths occur in subjects who have not received post-exposure vaccination; mostly because it is not available near where they lived. Distant travel to obtain multi-visit post-exposure prophylaxis is often not possible due to cost alone, but education is also still deficient in many parts. Documented survival of several humans with rabies generated hope of a cure but this has not materialized. All of the rare survivors had developed antibody titers on admission and no virus could be identified in blood, spinal fluid or tissues. This indicates that it was their natural immune response that conquered the virus together with good supportive medical care. The major rabies vector worldwide is the dog. Rabies control in owned and stray canines remains far from effective; particularly in Asia, Oceania and Africa. International travelers, venturing outside well protected tourist sites, are at risk of rabies exposures in many endemic regions. Furthermore, though vaccination may be available, immunoglobulin, which is required for extra protection in severe exposures, is often not or is administered too late and incorrectly. This presents a valid argument for pre-exposure vaccination of some tourists who might be atl risk of exposure, usually from canines or bats.

Workshop 2: Update on international travel recommendations

Update on international travel recommendations
D. Patel
G. Poumerol

Abstract not available

28
APTHC-0824
Update on international travel recommendations

G. Brunette[1]
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Presentation: CDC Resources: 2014 Yellow Book, Travelers' Health Website and Mobile Apps for Travelers

This presentation will focus on three topics; CDC's Health Information for International Travel 2014 (The Yellow Book), an overview of the recently re-designed CDC's Travelers' Health website and an introduction to two new mobile apps designed for travelers.

The 2014 edition of the Yellow Book has been updated to meet the goal of making this publication an indispensible desktop reference for the travel medicine clinician. Many new sections have been added, including additional diseases related to travel and an expanded Select Destinations chapter. Yellow fever and malaria tables provide the latest on vaccine requirements, prophylactic medications and CDC recommendations. All of the maps have been updated. The editors have also tried to address real-world issues by highlighting some of the more controversial topics with editorial boxes.

CDC's Travelers' Health website remains one of the most referenced sources of information for both travelers and providers. The website was recently re-

designed to provide separate information for travelers and clinicians. In addition to comprehensive changes to the 250 destination pages, new components were added to the website to provide travelers and their clinicians with portable, actionable content. Travel notices are posted regularly to provide information about any situation which could adversely affect the health of travelers. The importance of relevant information for particular traveling populations continues to be addressed with new notices and announcements.

CDC's Travelers' Health has developed two new mobile applications for travelers. These apps will be demonstrated during the presentation.

ABC 1: Malaria

29
APTHC-0688
Malaria

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For all travelers, the clinician should ascertain during the pre-travel medical encounter, whether the patient's itinerary puts them in need of protective measures. If yes, then the provider should recommend malaria chemoprophylaxis when indicated as per the guidelines to be presented during the workshop. Several equally effective drugs of choice may be listed. Ascertain which is best suited to the individual patient and itinerary by consulting the detailed malaria section of the resources to be discussed. The provider should reinforce mosquito precautions as will be presented.

Symposium 3: Mountain & wilderness medicine

33
APTHC-0710
Altitude illness

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[1]*Oxford University Clinical Research Unit,*
Pahs and Nepal International Clinic, Kathmandu, Nepal

Altitude Sickness is an umbrella term that encompasses benign acute mountain sickness (AMS) and the two life threatening forms of high altitude pulmonary edema (HAPE) and high altitude cerebral edema (HACE). This 25 minute session will focus on how to prevent altitude sickness in various groups of sojourners to the mountains like trekkers, climbers, and the seldom- talked-about international pilgrims that ascend in large numbers to sacred lakes and shrines in the mountains in Asia. Prevention, especially new aspects, will be emphasized but treatment of these conditions will also be discussed. The talk will also deal with common pre-existing situations such as hypertension, diabetes, pregnancy, and other topics in sojourners ascending to high altitude. Finally the role of societies like The International Society of Mountain Medicine (ISMM) in increasing global awareness about altitude sickness will be highlighted

Management of bites and stings
J. Seymour

Abstract not available

35
APTHC-0717
Risk and responsibility in adventure travel

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[1]*Travel and Mountain Emergency Services,*
Providence Hood River Memorial Hospital, Hood River OR, USA

Risk

Objectives:
Who is responsible when things go wrong?
Mitigating risk in travel medicine

History of risks in adventure travel, science, medicine
Why take risks
Probability of illness or injury
Risk goes up with severity of consequences, likelihood of permanent disability or death
Risk goes up with frequency of exposure

Measuring Risk
Measured by #accidents or illness/total number of traveler days exposed

Difficulty to quality on severity of exposure sometimes.
In other words, does not always take into account skill, experience, equipment, behavior.
For example, 25 deaths/1000 Everest climbers. But...doesn't account for large percentage of beginner-intermediate climbers and excludes Sherpas.

Types of Risks
Objective risks
Subjective risks

Stats of Accidental Death: Example #1
What is riskier?
Inbounds skiing
Avalanches

Both have 40 deaths/year in US
50 deaths/year in Europe

Risky Business?
Is our behavior commensurate with risk?
Is our behavior commensurate with skill, experience, training, equipment?
Judgment is a key factor

Medical Relief Work: Example #2
Risks to population
Risks to aid worker
Aid worker Risks
Risks to health of population

Responsibility
Self
Partners
Guides: paid
Unpaid volunteers: duty to act
Good Samaritan
Public Safety agencies

Mitigating Risk
Roll of Travel medicine professional

Rules and Regulations
Closing areas
Requiring permits
Requiring guides
Requiring safety briefing

Cost recovery: user fee
User fees
Mount Kilimanjaro, Tanzania
Inca Trail, Peru
Mount Everest, Nepal
Mount Denali, Alaska, US

Cost Recovery: Charging for Rescue
North America

Europe
Africa
Australia/new Zealand?
Asia?

Mitigating Risk
Good judgment
Preparation
Skills
Education
Experience
Equipment
Professionals: guides, travel medicine provider, public safety agencies

Destination 1: Vietnam and Cambodia

Vietnam and Cambodia
R. Kot
G. Gossius

Abstract not available

Free Communication 2: Pre-Travel and VPDs

40
APTHC-0719
IMMEDIATE RECALL OF HEALTH ISSUES DISCUSSED DURING A PRE-TRAVEL CONSULTATION

S. McGuinness[1], T. Spelman[1], D. Johnson[1], J. Richards[1], J. Denholm[1], S. Hume[1], I. Ratnam[1], K. Horne[1], B. Cowie[1], K. Leder[2]
[1]Victorian Infectious Diseases Service, Royal Melbourne Hospital, Melbourne, Australia
[2]Infectious Disease Epidemiology Unit Department of Epidemiology and Prev entive Medicine, Monash University, Melbourne, Australia

Introduction: An important role of specialised pre-travel health centres is to improve travellers' understanding of travel-related diseases, but the efficacy of education is unknown. This study sought to assess recall and knowledge immediately following a pre-travel consultation.

Methods: The study was conducted at a hospital-based pre-travel clinic in Melbourne, Australia. Travellers aged at least 16 years seen between Sep 2010 and March 2012 were invited to complete an anonymous self-administered questionnaire immediately following their consultation to assess their knowledge of appropriate preventative measures and (where relevant) presumptive self-treatment strategies for common travel risks. The doctor of each participating traveller also completed a survey regarding issues discussed.

Results: 300 participants were recruited (34% male, median age 31 years). Most were travelling for vacation (77%) and reported previous travel (95%). Main travel destinations were Asia (43%), Americas (21%) and Africa (17%). Doctors' and travellers' surveys showed variable levels of concordance: 94% of patients recalled discussion of malaria, 84% rabies and 76% dengue. For malaria, recall regarding use of insect repellents was correct for 95%, but 8% did not recall that medical advice should be sought if fever developed. For travellers with whom rabies was discussed, 6% failed to recall that medical advice must be urgently sought following a bite. For TD, most (99%) knew to drink only boiled/bottled water, but 5% did not recall avoidance of undercooked meat/seafood as a prevention strategy. There was 4% discordance between

doctors and travellers about whether malaria prophylaxis was prescribed, 20% discordance regarding antibiotics for presumptive self-treatment of TD, and 30% incorrectly recalled prescription of specific vaccines. Factors associated with improved recall were previous travel and travel reason.

Conclusions: Discussion of multiple travel risks can be overwhelming. Immediate recall of information is often incorrect, thereby decreasing the likely effectiveness of preventive advice.

41
APTHC-0721
TRAVELLERS VISITING FRIENDS AND RELATIVES: PERCEIVED BARRIERS TO THE UPTAKE OF TRAVEL ADVICE AND TRAVEL VACCINATIONS AMONGST MIGRANT AUSTRALIANS

H. Seale[1], A. Heywood[1], A. Mahimbo[1], N. Zwar[1]
[1]School of Public Health and Community Medicine, University of New South Wales, Sydney, Australia

Migrants who visit friends and relatives (VFRs) in their countries of origin have been associated with higher risks of acquiring infectious diseases. Issues such as misconception of travel related risks, economic, cultural and language barriers have been associated with poor uptake of pre-travel advice among VFRs. The aim of this study was to identify strategies that would potentially enhance pre-travel advice uptake amongst Australian VFR travellers. Semi-structured interviews were undertaken to explore their perception towards travel related risks and recommend effective strategies to improve uptake of pre-travel health information and vaccines among this subgroup of travellers. There was a perception among the participants that non-VFR travellers were at a higher risk of acquiring travel related illnesses compared to VFRs. The common assumption was that VFR travellers would be more immune and therefore resistant in acquiring communicable diseases. When asked to comment on whether they thought there were any barriers impeding accessibility of pre-travel health information among VFRs; participants were divided. Having language appropriate workshops, running campaigns via ethnic specific newspapers and radio stations, and working with GPs were just some of the proposed approaches which could be used to educate the community and in the process rectify the myths around pre-travel risks and vaccinations. The diversity of ethnicities among migrants in Australia poses a challenge in addressing context specific travel related risks among VFRs.

Collaboration between the Government, GPs and Migrant Resource Centres at large is crucial to try to successfully reduce travel related risks among this subgroup of travellers.

42
APTHC-0741
DURATION OF YELLOW FEVER IMMUNITY IN HEALTHY INDIVIDUALS VACCINATED MORE THAN 10 YEARS AGO

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[1]Tropical and Travel Medicine, Academic Medical Center, Amsterdam, Netherlands
[2]Department of Infectious Diseases, Leiden University Medical Center, Leiden, Netherlands
[3]Tropical and Travel Medicine, Havenziekenhuis, Rotterdam, Netherlands
[4]Experimental Immunology, Academic Medical Center, Amsterdam, Netherlands

Background In May 2013, the WHO sage announced a yellow fever vaccination policy change stating that revaccination of healthy individuals every 10 years was no longer necessary. In our opinion, this statement was based on scarce evidence and we therefore sought for a more solid base of evidence for this guideline.

The aim of this study is to compare antibody presence and yellow fever (YF)-specific T cell responses in healthy individuals vaccinated less than 10 years ago and more than 10 years ago.

Methods From January 2012 to November 2013, 75 healthy individuals vaccinated more than 10 years ago and 30 individuals vaccinated less than 10 years ago were included in this study. Virus neutralizing antibodies were studied using a Plaque Reduction Neutralization Test. The presence and phenotypic profile of YF-specific CD8+ T cells was characterised by tetramer staining. YF-specific CD8+ T cell responses were assessed after stimulation with tetramer specific peptides.

Results Neutralizing antibodies and YF specific CD8+ T cells were present in comparable percentages of long-term (up to 38 years after vaccination) and short-term vaccinees. In two HLA A2+ vaccinees vaccinated 12 and 15 years ago, (0.6-3.0% of CD8+ T cells) were identified and shown to have both classical (CD45RAdimCD27+) and effector memory phenotypes (CD45RAhiCD27). In one HLA B27+ individual vaccinated 25 years ago, yellow fever specific T cells were identified after peptide stimulation.

Conclusion The 17D yellow fever vaccine induces a long term humoral and cellular immune response, and our results provide a more solid base of evidence for the WHO guideline changes. Antibodies were present up to 38 years following vaccination. Functional YF-specific T cells with various phenotypes were demonstrated up to 25 years after vaccination

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APTHC-0706
GEOGRAPHIC DISTRIBUTION OF MALARIA INCIDENCE AMONG ISRAELI TRAVELERS- AN IMPLICATION FOR MALARIA PROPHYLAXIS?

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[2]Department of epidemiology, Ministry of health, Jerusalem, Israel

Objectives: The WHO and the CDC designate most Asian and Latin American countries as malaria endemic, and recommend malaria prophylaxis for travelers. We aimed to establish continent-based incidence rates for malaria in Israeli travelers.

***Methods*:** We reviewed all malaria cases that had been reported to the Ministry of Health between 01/01/1995-31/12/2011. The numbers of Israeli travelers to developing countries were established by using the UNWTO database. Malaria prophylaxis actual use rates were evaluated by telephone survey.

Results: Of 747 travel-related cases, 508(76%) were acquired in Africa, 104(15%) in Asia, 32(4%) in Latin America, 17(2.5%) from Oceania. The

highest attack rate was in Sub-Saharan Africa & Oceania, and the lowest was in Asia (including India) & Latin America (table).

Malaria prophylaxis usage rate was 13%, 13%, 6%, 14% and 57% among travelers to Asia, South America, Central America, Oceania and sub-Saharan Africa, respectively.

Table: Malaria case distribution & attack rate by continents

	Sub-Saharan Africa	Asia	South America	Central America	Oceania
P. Falciparum	320(63%)	24(23%)	3(10%)	0(0%)	1(6%)
P. Vivax	179(35%)	81(78%)	29(90%)	6(100%)	15(88%)
P. Ovale	8(2%)	3(3%)	1(4%)	0(0%)	0(0%)
P. Malariae	9(2%)	1(1%)	1(4%)	0(0%)	2(12%)
Overall attack rate range /100,000	51-6,683	2-19	2-15	2-11	1,164
P. Falciparum attack rate range/100,000	41-6,683	0-8	0-2	0	59

We calculate that in order to prevent one case of travel-related *P. falciparum* malaria in Asia and South America, 12,000-307,000 and 59,000-173,000 travelers ,respectively, would require prophylaxis.

Conclusion: travelers to areas other than sub-Saharan Africa & Oceania appear to be at very low risk for *P. falciparum* malaria, calling into question the risk-benefit ratio of chemoprophylaxis outside Africa & Oceania. It may be that education and personal protection methods alone can be recommended for low-risk areas.

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APTHC-0744
JAPANESE ENCEPHALITIS AMONG PATIENTS WITH ACUTE ENCEPHALITIC SYNDROME ADMITTED TO A TERTIARY HOSPITAL IN CHITWAN, NEPAL – A PROSPECTIVE OBSERVATIONAL STUDY

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[3]Neurology, College of Medical Sciences, Bharatpur, Nepal
[4]The Gilbert Israeli Neurofibromatosis Center, Tel Aviv Medical Center, Tel Aviv, Israel
[5]The Center for Geographic Medicine and Tropical Diseases, Sheba Medical Center & Sackler Faculty of Medicine, Tel Aviv, Israel

Introduction - The reported incidence of JE among patients with acute encephalitic syndrome (AES) in Nepal ranges between 20% to 62%. In light of increasing vaccination coverage we sought to describe the epidemiology of JE in Chitwan, Nepal.

Methods - A prospective observational study was conducted during 2010-2012 in the College of Medical Science in Chitwan District. Patients with suspected JE were tested for anti-JE IgM in serum and cerebrospinal fluid (CSF).

Results –Of 227 patients tested, 18 (7.9%) were found positive for JE. All except two patients were diagnosed on the basis of positive serologic test both in serum and CSF samples. Patients with JE were significantly older (42.1±27.6 years) than patients without JE (25.6±25.2 years, p=0.02). More of the JE cases (11/18, 61.1%) occurred during the rainy season when compared to the JE negative patients [71/209, (34%), p=0.01]. None of the JE patients had a relevant travel history, and one recalled having been immunized against JE. There was a variation in the geographic distribution of cases across the districts of the central Terai.

Conclusions – In this cohort, the proportion of patients with AES who had JE was lower than in previous studies. In addition, most patients were adults, and cases were not distributed uniformly across the central Terai region. These observations could be explained by increasing vaccination coverage, vector-

control efforts, interference with other infections, and population migration into the Terai region. The risk of acquiring JE by short-term travelers in the area is likely to be low.

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APTHC-0705
DEFINING EDUCATION AND TRAINING PRIORITIES FOR PHARMACISTS IN TRAVEL HEALTH

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University of New South Wales, Sydney, Australia

Introduction
Pharmacists are providing more travel health services. Studies have highlighted the need for improved education for pharmacists in travel medicine.[1-3] It is crucial for travel health providers to attain and maintain sufficient relevant knowledge. This study aims to define a travel health training program with prioritised themes for pharmacists.

Methods
Advertisements for continuing education (CE) on travel health for pharmacists were mailed to all community pharmacies in the ACT region. A reminder was sent through the Pharmaceutical Society of Australia (PSA) ACT eNews three weeks prior to the activity. Any pharmacist interested in the subject could attend.
On commencement, a 4 question multiple choice test on pre-travel planning and travel-related infectious disease assessed baseline knowledge. The test results were not revealed nor were the answers discussed.
The CE workshop was delivered in workshop format by an accredited trainer. Each of the post-test themes was covered. A post-CE quiz in the same format (different questions) immediately followed the workshop.
Test results were analysed using Microsoft Excel. The training evaluations included participant feedback, random in-depth interviews with participants at their worksites and audit by the PSA

Results
Nine participants attended the training with 100% completing both the pre- and post- quizzes. Weighted average scores in the pre-test were 89% on pre-travel

planning and 33% on travel-related diseases. Weighted scores in the post-quiz were 100% on personal protection behaviours, 78% on epidemiology and 67% on infectious disease therapeutics.

Conclusion
Pharmacists' travel health knowledge improved due to a tailored education intervention. Pharmacists appear to be an underutilised resource for travel health advice.

Meet the Professor 1

46
APTHC-0813
Clinical cases from the National Hospital of Tropical Disease

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Back ground: Human trichinellosis is a parasitic infection caused by Trichinella roundworms. The traditional route of infection is by ingesting raw or improperly cooked pork from infected domestic swine. Eight species and three genotypic variants have been identified in various animal hosts, and Trichinella spiralis is the most common cause of human trichinellosis. Case presentation: A cluster of 4 cases of human trichinellosishave been hospitalized in NHTD in 2012. Clinical syndrome of Trichinella infection is caused by larvae migration and invasion of target tissues, primarily muscles causing muscle pain and swelling. Systemic symptoms include headache, maculopapular rash, focal edema, local inflammation, leukocytosis, and eosinophilia. A definitive diagnosis is established by demonstration of larvae in muscle, blood, or cerebrospinal fluid. Cases presentation here in the rare cases report of Human trichinellosis with suitable history, clinical, laboratory findings, and imaging diagnosis. Conclusion: Human trichinellosis is still problem for public health especially in promoting area. Diagnosis is chifly based on epidemiological factor, eosinophilia and byopsy

Plenary 2: Re-emerging diseases and travel

Travelers and the spread of bacterial resistance
G. Thwaites

Abstract not available

50
APTHC-0832
Travelers and polio

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Poliomyelitis is highly infectious. The virus enters orally, invades the nervous system and may cause paralysis in one of 200 infections of which 5% to 10% die.

Poliomyelitis has decreased since 1988, from 350 000 cases in 125 countries, to 406 cases in three countries in 2013 (Afghanistan, Pakistan and Nigeria). Poliovirus type 2 was eradicated in 1999. In 1994, Americas were certified polio-free, in 2000 the Western Pacific Region, in 2002 the European Region and in 2014 the South-East Asia Region. Now 80% of the world's population is polio-free. WHO estimates that failure to eradicate polio in the remaining countries could result within 10 years in 200 000 cases every year. 2018 is the current date for polio eradication.

Despite the drop in cases in 2012 there are new cases reported in Afghanistan, Cameroon, Equatorial Guinea, Nigeria, Pakistan, Ethiopia, Kenya, Somalia, and Syria. Thus, the polio virus seems to be "travelling" to new regions. In Israel there was an outbreak of poliomyelitis in 1987. Control was achieved by vaccination with IPV and OPV. For 25 years sewage sampling found no poliovirus. In 2005 OPV was stopped. In March 2013 sewage surveillance disclosed poliovirus type 3, identical to virus isolated in Egypt in 2012 and in Pakistan. A plan for mitigation of polio included return to Bivalent OPV in children under five. Three doses were given initially in areas with poliovirus in

sewage and subsequently to all children. There were no cases of poliomyelitis probably because of high IPV coverage rate. After four months of the OPV vaccination regime there was no virus in the sewage in Israel.

The presence of virus in the sewage without clinical cases suggests that Western countries should continue surveillance of virus in sewage. Clinical polio eradication may be easier to reach than viral eradication.

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APTHC-0810
Travelers and pertussis

M. Starr[1]
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There are 50 million pertussis cases per year, and the disease remains one of the top ten causes of death in children under the age of one year. The majority of deaths occur in the developing world in infants less than six months of age. Disease elimination by vaccination should be possible, but has proved elusive. Many industrialised countries with long established immunisation programs are currently seeing a resurgence of pertussis, despite universal vaccination with high uptake, with the highest burden in the least immunised age groups (infants under 6 months of age and children over 10 years old). However, low recognition and reporting and insensitive diagnostic tests mean that the true burden of pertussis is still underestimated. The Global Pertussis Initiative was established in 2001 to evaluate the ongoing problem of pertussis worldwide and to recommend appropriate control strategies.

The problems associated with recognition, diagnosis, management and surveillance of pertussis will be discussed and some potential strategies for dealing with these explored.

Symposium 4: Diagnosing the ill traveler

54
APTHC-0812
Viral diseases: Diagnosis of arboviral infection

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Arthropod borne viral infections rank among the most common viral infections to occur globally, although the true burden of disease can only be guessed at. Mosquito–borne viruses within the family Flaviviridae comprise the largest arboviral group, with dengue and viruses from the Japanese encephalitis virus group recognized as having the most significant impact on human health.

Around 50% of the world's population, some 2.5-4 billion people, live in areas at risk of dengue virus (DENV) infection; recent estimates suggest that 390 million infections occur globally each year, of which 96 million are clinically apparent. Dengue is now reported from over 100 countries, with a particularly high disease burden across South and Southeast Asia, and increasing numbers of cases reported from Latin America. Disease transmission has also been recognized in Africa, although the extent of the problem remains unclear. Although the vast majority of DENV infections are asymptomatic, a broad spectrum of clinical manifestations ranging from mild febrile illness to severe and fatal disease may occur. Potentially fatal complications include a systemic vascular leak syndrome that may result in hypovolaemic shock – i.e. dengue shock syndrome – as well as severe bleeding, profound thrombocytopenia and major organ impairment.

Japanese encephalitis and related viruses also have a high asymptomatic: symptomatic ratio, but the clinical presentation is primarily neurological in those who do develop symptomatic disease. The clinical characteristics and diagnostic features of the most important arboviral infections that occur worldwide will be reviewed, emphasising the differential diagnosis and general principles of management.

55
APTHC-0807
Bacterial diseases: Diagnosis of travel-associated enteric fever and GI infections

A. Haque[1]
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Travel-related health problems have been reported in nearly two third travelers to developing countries. Upto 8% of travelers are ill enough to seek care. Potential exposures differ depending on the region of travel. In a large study in 2010, the most common bacterial disease found in a travelers returning from Asia, particularly South Asia was enteric fever followed by diarrhea. There are an estimated 21 million cases of enteric fever globally annually. Although *S*. Typhi is the main cause, *S*. Paratyphi A infection is on a rise. Drug resistance now occurs in the majority of clinical isolates. One of the key issues is how to detect the extremely low level bacteraemia. Blood culture is the most common reliable technique. Between 45 and 70% of patients with typhoid fever may be diagnosed by blood culture but it takes 2-5 days and sensitivity is poor. Several serological tests such as Widal test are available but they are only moderately specific. Molecular methods have provided vast options. DNA probes were used nearly 20 years ago but they are not sensitive enough. PCR overcomes this problem and has been widely used in recent years. The targets include flagellin gene *fliC-d,* and the *viaB* region encoding the Vi antigen. Real-time PCR has also been employed. The sensitivity and specificity of PCR assays is significantly better compared to that of blood culture and serological methods. Multiplex PCR techniques have 100% specificity and sensitivity and can detect 1 pg of *Salmonella* genomic DNA. Sensitivity can further be increased by cultivation for a small period followed by PCR or by removing interfering genomic DNA. In recent years several isothermal PCR technologies have emerged which are less complicated and less expensive. These include LAMP (loop-mediated amplification), SDA (strand displacement amplification), and HAD (helicase-dependent amplification).

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APTHC-0731
Parasitic diseases: Stool, blood and tissue PCR for the diagnosis of parasitic disease

R.S. Bradbury[1]
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The advent of modern molecular testing and immunologically based rapid tests has revolutionised the diagnosis of several important tropical diseases. Whilst these tests provide a useful tool, they do not replace clinical acumen in diagnosis. It is important for clinicians dealing with returned travellers to be conversant with the advantages and disadvantages of different test methodologies in order to correctly collect specimens, order, and interpret these tests. This talk will focus on several important parasitic diseases in the Asia and Pacific region for which rapid and molecular diagnostics are available, discussing the pros and cons of each methodology to better inform the travel health practitioner in their choice and interpretation of these tests. The lecture is presented as part of the Diagnosing the Ill Traveller Symposium.

Nurses' Session

59
APTHC-0815
The nurses role in travel medicine

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[2]School of Nursing, James Cook University, Townsville, Australia
[3]Flight Crew Med Services, Japan Airlines, Tokyo, Japan

The majority of travelers from the UK requiring pre travel advice or immunisations will attend their local General Health Care Practice – a free National Health Service – with most of these consultations delegated to the Registered Practice Nurses who work as part of the care team. Occupational Health nurses have also taken on a prominent role as TH advisors providing care for their company employees, and recent years have seen an increase in private travel clinics being established, again with nurses taking a lead role.

These responsibilities and roles within travel health care, adopted by nurses in the UK, have encouraged education and development within this field

For any health care professionals providing TH care, it is important that training opportunities are available. This need was identified by the Royal College of Nursing (RCN) in 2005 when they developed guidance for nursing staff "*Delivering travel health services*" This short document recognised that travel medicine had become a nurse led specialty and emphasised the requirements for basic training and standards of care. This guidance was further expanded in 2007 within the RCN competencies document (Updated 2012) (1.)

Nurses in the UK are fortunate to have the support of their national body, however an international study carried out in 2012 (2.) identified that the role of nurses within travel health care and available educational opportunities, varied greatly between countries.

This talk is designed to highlight travel health nursing roles and responsibilities and discuss international variations.

1. Chiodini J, Boyne L, Stillwell A, Grieve S *Travel health nursing: career and competence development, RCN guidance.* RCN: London, 2012.
2. Bauer I. Hall S. Sato N. *Providing travel health care - the nurses' role: An international comparison* Travel Medicine and Infectious Disease (2013) 11

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APTHC-0817
The nurses role at the International SOS clinic

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Nursing in Vietnam is both challenging and evolving role. Travel medicaine is an added component to the role of the nurse at International SOS who works within our 24 hour medical facility that offers GP, emergency and evacuation services. Being a global service it enables us to assist clients from all parts of the world.

We are able to offer the traveller everything from vaccinations, general medicine to the complexeties of more serious cases write through to our comprehensive evacuation services to anywhere in the world. The nurse's role is one of carer, advisor and sometimes planner when it comes to coordinating ongoing care of the tourist while still travelling in Vietnam or further afield. We are also able to assist the Vietnamese community in travel abroad through our Visa Health check program. Challenges faced here in Vietnam in regards to travel health come from the threat of pandemics, the tyranny of distance and culture. The traveler can expect a high level of medical care from the medical team.

Free Communication 3: During and Post-Travel

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APTHC-0789
ACUTE HEPATITIS E VIRUS IN PREGNANT WOMEN IN ISRAEL-A NON-ENDEMIC COUNTRY FOR HEV.

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Background - Acute hepatitis E virus (HEV) is the most common etiology of viral hepatitis in adults in developing countries. HEV is yet uncommon in developed countries, but its' frequency is rising both in returning travelers and as an autochthonous infection. As expected, the majority of clinical data originates from developing countries. According to data from Asia, HEV in pregnant women could lead to fulminant hepatitis in up to 30% of the cases. There are no reports of the disease course in pregnant women in non endemic countries.

Methods – A retrospective analysis of all acute HEV cases diagnosed in Israel. The clinical course of the disease among pregnant women was retrieved. Acute HEV was defined as acute hepatitis and a positive HEV PCR or IgM serology.

Results - During the years 1993 – 2013, 70 cases of acute HEV were diagnosed in Israel, among them7 pregnant women. Their mean age was 32.1 years . One patient was in the 2nd trimester of her pregnancy, 4 in the 3rd trimester and 2 postpartum. Only 1 case was acquired after a travel to India, the rest were autochthonous infections. The outcome was favorable in 5 cases, however, 2 cases (28%) were fulminant, and one of them underwent liver transplantation.

Conclusions – This is the first case series of acute HEV in pregnant women in non endemic countries. Pregnant women composed about 10% of our cohort, and the majority of these cases were autochthonous. This small case series shows a risk of 28% for a fulminant course. HEV among travelers is emerging and therefore female travelers at child bearing age should be aware of the risk of the disease. Since HEV vaccine exists, its use in high risk travelers populations should be considered.

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APTHC-0767
THE CONTRIBUTION OF TRAVELLERS VISITING FRIENDS AND RELATIVES TO NOTIFIED TYPHOID AND PARATYPHOID IN AUSTRALIA

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Introduction: Migrants and their children who return to their country of origin to visit friends and relatives (VFR) are at increased risk of infectious diseases. With a quarter of Australia's population foreign-born and a quarter of departing Australians VFR travellers, VFR travel is an important national disease control issue. Data is lacking on the magnitude of VFR travel-associated disease, globally and in Australia. We aimed to determine the contribution of VFR travel to notifiable diseases in Australia.

Methods: A prospective study of notified typhoid and paratyphoid was conducted in the States of Victoria and New South Wales. During routine follow-up of notified cases between February and October 2013, permission for enhanced surveillance was obtained. Investigators collected additional data on international travel, pre-travel health preparation and at-risk behaviours.

Results: Of the 41 Australian residents, travel was reported by 37/41 (90.2%); 20/23 typhoid and 17/18 paratyphoid. VFR travel comprised 29/37 (78%) cases; 20/20 (100%) typhoid and 9/17 (53%) paratyphoid. Overall, 28/37 (76%) spoke a language other than English and 24/37 (65%) were migrant Australians, 19 (79%) from South Asia. 6 (16%) were second generation Australians, all with South Asian parents. Only 9/37 (24%) sought pre-travel advice. Low risk (12/28, 43%) and previous healthy travel (8/28, 29%) were main reasons for not seeking advice. Of typhoid cases, 1 case (5%) reported typhoid vaccination (1/5, 20% seeking pre-travel advice) and 1was too young (<1year) for vaccination. Of paratyphoid cases, 3/17 (18%) reported a typhoid vaccine (3/4, 75% seeking pre-travel advice).

Conclusions: VFR travel is an important contributor to cases of typhoid, and to a lesser extent, paratyphoid in NSW and Victoria. Although pre-travel advice seeking was low, missed opportunities to vaccinate were identified. This study confirms the low perceived risk of migrant Australians and their children for return travel to their country of origin.

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APTHC-0784
CONTRIBUTION OF QUANTITATIVE PCR ANALYSIS TO MALARIA SPECIES IDENTIFICATION IN ISRAEL 2009-2013: A RETROSPECTIVE CROSS-SECTIONAL STUDY

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Primary diagnosis of Malaria is done in Israel at the hospital's laboratory using blood smears and Rapid Diagnostic Kits (RDT). Blood samples are mandated to be subsequently sent for plasmodium species confirmation to the Ministry of Health- Parasitology Reference Center. Quantitative PCR (qPCR) is the primary confirmation method since 2009. Our objective was to evaluate the contribution of qPCR to Plasmodium species identification in non-endemic setting. Samples sent to the Reference Center between 2009 and 2013 were analyzed using qPCR. The results were compared to those reported by the hospitals.

Of 295 patients (367 samples) suspected for Malaria, 216 (73%) were found positive. All acquired the parasite outside Israel. They consisted of Israeli travelers (N= 116; 53%), African refugees (61, 28%) and others (39, 18%). Two cases negative for malaria in the hospital were positive by qPCR, while 14 patients who were positive in the hospital laboratory were negative by qPCR. None of those found negative by qPCR subsequently developed Malaria in Israel.

Results for malaria patients confirmed by qPCR are summarized in Table 1. The hospitals misdiagnosis in falciparum malaria reached 13% while in the non-falciparum spp.it was much higher. In 26% of positive cases the qPCR correction was relevant for treatment.

In conclusion, overall the qPCR changed the correct species identification in positive patients by 30%. In most of them this correction was relevant for treatment.

Table 1: Correction of *plasmodium spp.* identification using qPCR:

	Identified correctly in hospital (%)	**Corrected by qPCR (%)**	**Total cases**
P. falciparum	**87 (87%)**	**13 (13%)**	**100**
P. vivax	**62 (66%)**	**32 (34%)**	**94**
P. ovale	**1 (9%)**	**10 (91%)**	**11**
P. malariae	**1 (20%)**	**4 (80%)**	**5**
mixed	**1 (17%)**	**5 (83%)**	**6**
Total	**152 (70%)**	**64 (30%)**	**216**

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APTHC-0707
A PENTAPLEX PCR ASSAY FOR SIMULTANEOUS DETECTION OF HAEMORRHAGIC AND DIARRHEAGENIC BACTERIA AMONG CHILDREN

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Diarrhoeal diseases cause illness and death among children younger than 10 years in developing countries. Conventional testing for detection of diarrheagenic bacteria among children takes 2–5 days to yield complete information of the organism and its antibiotic sensitivity pattern. Hence, in the present study, a molecular-based diagnostic assay was developed that identifies common haemorrhagic and diarrheagenic bacteria in stool samples. A set of specific primers were designed for detection of *Salmonella* spp., *Shigella* spp, *Escherichia coli* and *Campylobacter* spp., suitable for use in a one-tube PCR assay. The present study simultaneously detected five genes, namely *omp*C of *Salmonella* genus, *vir*A of *Shigella* genus, *eae*A for *Escherichia coli*, 16S rRNA of the *Campylobacter* genus and *hem*A gene for internal control. Specific primer pairs were successfully designed and simultaneously amplified the targeted genes. Validation with 20 Gram negative and 17 Gram-positive strains yielded 100% specificity. The limit of detection of the multiplex PCR assay was $1x10^3$ CFU at the bacterial cell level and 100 pg at the genomic DNA level. Further evaluation of the multiplex PCR with 223 bacteria-spiked stool specimens revealed 100% sensitivity and specificity.

We conclude that the developed multiplex PCR assay was rapid and gave results within 4 h, which is essential for the identification of diarrheagenic bacteria and might be useful as an additional diagnostic tool whenever time is important in the diagnosis of diarrheagenic bacteria.

In addition, the presence of an internal control in the multiplex PCR assay is important to exclude false-negative cases.

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APTHC-0703
SCHISTOSOMIASIS IN PREGNANT TRAVELERS

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Background: Travel related acquisition of schistosomiasis in Africa is well established. However, in the past decade there is a growing number of case reports from South-east Asia, especially from Laos. Data concerning *Schistosoma* infection in pregnant travelers is lacking and treatment derives from studies in endemic regions. In this case-series we report the course and outcome of pregnancy in eight travelers (with 13 pregnancies) who had schistosomiasis.

Methods: A retrospective case-series of pregnant patients who were infected with *Schistosoma* species. Data regarding exposure history, clinical presentation, diagnosis, treatment and fetal outcomes were collected and analyzed. Diagnosis of schistosomiasis was based on serology tests and/or ova recovery.

Results: Travel related schistosomiasis during pregnancy was diagnosed in eight women. Five of them traveled to Africa, two to Asia and one to South America. Four pregnant travelers were symptomatic and were treated during their pregnancy with praziquantel (PZQ). The course and outcome of pregnancy in these patients was uneventful and treatment had no apparent adverse effects neither on the mothers nor their babies. Four asymptomatic women were diagnosed years after exposure. During this period they gave birth to nine babies. They were never treated with PZQ. Birth weights were small as compared with the women who were treated during their pregnancy (median 2.8 versus 3.5 Kg, p = 0.002). One baby was born preterm.

Conclusion: This is the first case series of pregnant travelers with schistosomiasis. Although a small case-series it suggests that schistosomiasis in pregnant travelers should be treated. Pregnant travelers who were not

treated had a trend of lower birth weights. PZQ therapy during pregnancy was not associated with adverse pregnancy or fetal outcomes. Our results emphasize the importance of screening female travelers of childbearing age with a relevant history of freshwater exposure. Further studies are needed to reinforce these recommendations.

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APTHC-0783
LIFESTYLE AND RISKY SEXUAL BEHAVIOUR AMONG TREKKING GUIDES IN NEPAL

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Objectives: There is significant sexual interaction between travellers and trekking guides in Nepal, but up-to-date information is available about the life style and sexual activity of trekking guides. This study aimed to identify the (risky) sexual behaviour and condom use among male trekking guides in Nepal.

Methods: A self-administered questionnaire survey (n=341) was conducted using snowball sampling in 2013.

Results: The majority of respondents was young (42% below 25 years and 76% below 30 years). Nearly all (96%) were literate, most drink alcohol and smoke tobacco. and most of them had sexual experience and nearly two-third (66%) had foreign girlfriends, 84% had Nepalese girlfriends, and 40% had both foreign and Nepalese girlfriends at the same time. Most (82%) had had sexual intercourse with someone other than their wife. Trekking guides' age, educational status, age of first sex, training, smoking and drinking habit and English language proficiency were statistically significant for having sex with foreign women (P<0.05).

About 70% had used a condom during the last sexual intercourse with someone other than their wife. The condom use was more common when they had sexual contact with foreign partners than with Nepali sexual partners. Condom use was significantly association ($P<0.05$) with trekker guide's age, educational status, age of first sex and work experiences and nationality of sexual partners.

Conclusions: Most trekking guides have sexual intercourse with foreign women and condoms were not always used. Although knowledge about sexual health issues among trekking guides is high, some misconception and myths still encourage them to engage in unsafe sexual practices and risky lifestyle. Our findings suggest that there is an urgent need to revise the existing training curriculum for trekking guides and implement appropriate health promotion interventions.

Key words: tourism, South Asia, condom use, sexual behaviour, traveller

Symposium 5: Practical management issues for traveler vaccination

71
APTHC-0835
Vaccines for enteric infections

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Against a range of enteric diseases, at least partial protection is possible through vaccination. During this talk, the epidemiology (with particular emphasis on Asia), current vaccines at hand and vaccines in the pipeline for typhoid fever and related enteric fevers, cholera/enterotoxigenic *E. coli* (ETEC), and the viral hepatitides A and E will be outlined. Whilst the prime focus of the presentation lies on the discussion of protective measures for travelers, it goes without saying that reduction of disease burden and control of infection for the populations in countries with high endemicity must be the

prime goal when considering vaccination strategies. To that end, perspectives for better protection against those diseases by means of vaccination as a public health tool (again, with focus on Asia) will be discussed.

Vi polysaccharide subunit and Ty21a live-attenuated *Salmonella typhi* vaccines are currently marketed, offering up to 70% efficacy and a couple of years protection. Cross-protection against *S. paratyphi* is very limited. A prime goal of future developments is to develop S. paratyphi vaccine components facilitating bivalent protection across the enteric fever-causing Salmonellae.

Vaccination against cholera confers a limited degree of protection; however, there is cross-protection against 'travelers'diarrhea' (TD) - causing ETEC. Consequently, a killed whole cell cholera vaccine has been systematically evaluated for TD prevention in travelers. Whilst there is only insufficient evidence from RCTs that oral cholera vaccine is satisfactorily protective in travelers, there is a clear need for further vaccine developments to offer adequate protection against both infectious agents not only for travelers but the populations most afflicted in Asia and beyond.

Hepatitis A vaccines are effective, efficacious and readily available; with regard to an HEV vaccine, safety and efficacy of candidate vaccines have been demonstrated in clinical trials ; yet there are still open questions to be addressed.

72
APTHC-0836
Yellow fever vaccine

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Yellow fever vaccine indications as well as requirements under the International Health Regulations present an ever changing landscape. Several controversial areas will be reviewed. A new WHO Position Paper on yellow fever vaccination recommends that "a single dose of yellow fever (YF) vaccine is sufficient to confer sustained life-long protective immunity against YF disease; a booster dose is not necessary." The data supporting this conclusion have several limitations and do not consider specific at-risk subgroups. Until national guidelines endorse the WHO statement and the International Health Regulations are harmonized with the recommendation, the protective duration

of YF vaccination remains at 10 years for practical considerations. The current IHR, U.S. ACIP guidelines, and all commercial package inserts continue to recommend boosters every 10 years although systematic reviews at national levels are underway. Immunization with yellow fever (YF) vaccine produces a protective titer of antibodies in 98% of patients infected with HIV. Poor and early-waning responses are associated with high or uncontrolled viral loads, rather than with low CD4-T cell counts. Recent anecdotes about arbitrary enforcement of various real or imagined yellow fever requirements by airlines and border officials will be recounted

73
APTHC-0829
Vaccination in the Asia Pacific region

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With one third of the world's population in Asia-Pacific, it is undoubtedly a nidus for emerging , reemerging and newly-emerging diseases, some of which may be vaccine-preventable. The world is a global village and immunization is a "magnet for solidarity that transcends borders and sectors" according to WHO Director General Margaret Chan.

Childhood immunization is being implemented in almost all countries in Asia Pacific with some countries able to introduce newer and more vaccines in their national immunization program (NIP) depending on various factors mainly economic in nature and disease awareness to some extent. The basic ones comprise BCG, DPT, OPV/IPV, Hep B, and Measles. Additional vaccines such as HiB, JapB, and MMR were introduced later and in recent years, PCV , Rotavirus and HPV have been included in a few countries. Many countries are in the process of evaluating and considering the addition of new vaccines in their NIP while others have gone ahead and introduced the new vaccines and awaiting the impact of the vaccination program.

Yellow fever vaccine is needed for entry in high risk countries while for the Hajji pilgrims, meningococcal vaccine (A,C, W, Y) is also a "must". Other vaccines which are recommended for the protection of travelers in endemic areas include Jap B, Rabies, Typhoid, Cholera, ETEC, and Hep A. However there are those which having been included in their childhood immunization needs

to be checked for catch-up vaccination or booster doses (Tdap, MMR-V, Influenza). Outbreaks of measles and pertussis are occurring in many parts of the world.

Future vaccines are in various stages of development with Dengue and malaria vaccines in its later phase of clinical trials while other vaccines for enteric diseases such as Shigella, coronaviruses and noroviruses are in the early stages but promise to provide further protection to the at-risk travelers.

Workshop 3: Vulnerable traveler population

S. Borwein
J. Torresi

Abstract not available

ABC 2: Running a travel clinic

77
APTHC-0802
Running a travel clinic

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The aim of this workshop is to enable participants to develop a sound knowledge of the key issues involved in the set up and running of a travel medical service. A framework of key elements will be presented and audience participation will be encouraged. This list of key elements will form the learning objectives of the workshop. Some of the key elements will include:

- Centre Demographics (location of clinic, target groups of travellers)
- Centre Personnel (roles and responsibilities)
- Clinic Set Up including policies and procedures and legal issues
- Information Resources (accurate, reliable and up to date)
- Maintenance of a sound knowledge base in Travel Medicine
- Importance of accurate record keeping and recall systems
- Provision of written materials and electronic resources for travellers
- Provision of vaccines, prescription medicines and travel health products (storage, handling, documentation)
- Cost issues with service provision and how to incorporate these into the pricing of services
- Importance of key alliances
- Audit of service provision
- Marketing for growth and stability

Involvement from participants will be encouraged. It will be our intention to invite participants to provide their questions pre-workshop as much as possible so that the co-presenters have an understanding of the real needs of the participants. This will enable appropriate emphasis on key areas of need. This will not detract from the opportunity to ask questions and indeed offer suggestions and tips during the workshop itself.

Symposium 6: Social issues related to travel

80
APTHC-0753
Social media and travel

D. Mills[1]
[1]*Dr Deb The Travel Doctor, Travel Medicine Alliance, Brisbane, Australia*

About one in seven persons around the globe use a social networking site at least once a month, and that number is expected to grow significantly over the next several years. Whilst some sectors of the population invest time in social media, what about travellers? How useful is social media to travel medicine practitioners and their travellers?

This presentation will provide information about some of the most popular social media platforms and tools; Twitter, Facebook, Linkedin, Wordpress, YouTube, SurveyMonkey, ProProfs, oDesk, and MailChimp. Examples will be given of their successes and failures. Smartphone applications relevant to a travel medicine setting will be mentioned, including Travel Health app and Vaccine Record for Travellers.

Methods will be suggested to follow travel medicine news and conference news. The official meeting twitter hashtag is **#APTHC2014**. This # is a conduit to highlights, discussion, comments and feedback during the meeting

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APTHC-0693
Social safety and travel

M. Shaw[1]
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Every year around a billion folk cross international borders, generally without incident.Whilst most of the world is considered generally safe for most travellers, concerns are to the forefront about personal safety and security. Moving over borders and into foreign countries is safer than it has ever been in the history of the world. For all this, a small proportion of travellers encounter the worst of humanity, and it is this that Travel Health Professionals [THP] needs to communicate with intending travellers on; to prevent the best of trips from becoming the worst of nightmares.

Who leads the responsibility for personal safety? The THP guides the knowledge and their experiences in any consultation, but is 'the traveller' who is responsible and THP's need to make them aware of this fact. It is ultimately 'the traveller' who has to look after themselves.

Rarely do travel medicine conventions discuss personal and social safety, yet every trip that any traveller happens upon is fraught with security issues that could impact upon them.

There are many factors to ensure safe and secure travel, and pre-travel counselling is essential in the assessment of potential risk, such as: Health surveillance whilst travelling, personal accidents and injury, violence, societal transport accidents, devastating societal disaster, swimming, drugs, terrorism, and bioterrorism. A pragmatic guide to advising travellers on their own travel safety involves a checklist assessment to minimise problems that may present suddenly upon any intending traveller.

Some people are more scared than excited by the world around them. **This presentation aims to guide THPs on how travellers can become fear-free.** With simple rules, our travellers can learn not to be afraid of travel, or of meeting people, and how to immerse themselves in the colourful cultures of the world.

82
APTHC-0816
Social conscience and voluntourism

S. Hall[1]
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Within the field of travel medicine, the focus of health care has predominantly been on the traveller, with minimal attention given to the effect that the ever expanding tourism business can have on the health and well-being of the host communities.

A general concern for "Responsible Travel" has certainly been addressed over the years, but this talk will discuss the growing trend for "Voluntourism" and the associated problems being faced within the host countries, in particular when orphanages are part of the experience. There is now increasing awareness that vulnerable children are being exploited for commercial gain by tour operators who promote these placements for volunteers, but should this be of concern to travel health care professionals?

Sheila Hall is currently chair of the ISTM Destination Community Support Interest Group (DCSIG), which aims to address these diverse issues within its remit. The session is designed to raise awareness, stimulate discussion, and introduce organisations that are currently working to set standards and address this emerging problem.

www.orphanages.no
www.tourismconcern.org.uk
www.learningservice.info

Destination 2: Southern Africa

89
APTHC-0808
Southern Africa

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[1]*South African Society of Travel Medicine, Durban, South Africa*
[2]*South African Society of Travel Medicine, Johannesburg, South Africa*

Africa is becoming, if it has not already become, the centre stage. Not only is there conflict and strife in Africa resulting in misplaced populations, but there is simultaneous rapid expansion of corporate business and travel into Africa. Africa provides excitement and challenges - it is enticing and lures businesses and travellers into its fold, and net, of the unexpected. Travel to, and corporate involvement in, sub-Saharan Africa has increased in similar fashion and with it comes the problems of afflictions which reflect the epidemiology of diseases in the various countries and other problems which are specific to each country. This interactive workshop, through case presentations, will explore:

1. The infectious disease risk and the appropriate prevention, where applicable. The focus will be on malaria, African tick bite fever, tuberculosis, HIV infection, haemorrhagic fever, rabies.
2. Recent outbreaks
3. Non-infectious disease risks - in particular the lack of medical infrastructure and expertise
4. Vaccine requirements - mandatory, recommended
5. Resources

At the end of the workshop, delegates will have an understanding of

- the travel health risks to the sub-Saharan African countries
- the necessary pre-travel advice
- disease considerations in the ill-returning traveller
- resources available in determining up-to-date risk

Meet the Professor 2

History of malaria drug development
A. Magill

Abstract not available

Meet the Professor 3

92
APTHC-0825
Top Papers in the travel medicine literature

L. Chen[1]
[1]*Medicine, Mount Auburn Hospital and Harvard Medical School, Cambridge, USA*

Topics relevant to travel medicine span many diverse disciplines and specialties. New research findings of the past year in travel medicine will be highlighted, particularly those that may influence clinical practice. For this session, publication topics to be considered include malaria, dengue, yellow fever, emerging infections impacting travelers such as chikungunya, immunizations, mass gatherings, and general travel medicine practice. Attendees will learn about articles that apply to their preparation and evaluation of travelers.

Plenary 3: Emerging health impacts: environmental, population and economic changes

95
APTHC-0809
Environmental changes

A. Woodward[1]
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The most common diagnoses among ill returned travellers to Asia and the Pacific are all influenced strongly by environmental conditions. For instance, diarrhea, acute respiratory illness and vector-borne diseases (dengue especially) are consistently ranked the top 3 causes of morbidity, aside from trauma. Therefore the magnitude, direction and speed of environmental change will determine to a large extent the future burden of disease, for both the local population and travellers to the region. There are two large-scale changes afoot that will become increasingly important as the century advances. These are air pollution and climate change. Parts of the region are frequently immersed in pollution equivalent to the Great London Smog of 1953; trans-boundary movement of fine particles is now well-demonstrated and greatly expands the burden of disease attributable to pollution; and business as usual projections of economic activity suggest conditions will worsen considerably before new technologies and policy reform take effect. For related reasons, the current rate of global warming is projected to accelerate, and may lead, under high end scenarios, to a world that is 4-7 degrees warmer in 2100 than pre-industrial times. Intense heat waves, diminished food production in poorer parts of the region, changing distributions of disease vectors (heralded, perhaps, by the recent establishment of mosquitoes in Lhasa, China), and increased risk of coastal flooding are some of the routes by which climate change will act on health.

96
APTHC-0831
Population changes

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As globalization moves on there is an increasing number of factors influencing our health globally. Demographic trends worldwide are becoming similar, with decreasing fertility rates, longer life expectancy and aging. Since 2007, more than half of the world's population has become urban, leading to great changes in lifestyle, access to services and living environment. Better economic perspectives and new life expectations combined with easier access to means of transportation have accelerated internal (within countries) and international mobility, leading to over 250 million international migrants and over 500 millions internal migrants. These massive changes of population dynamics combined with great environmental and major socio-economic changes have had a significant impact on peoples' lifestyles, the epidemiology of diseases, the health of populations and health systems in place. Some diseases are on the rise, others on the contrary are decreasing. Travelers, crossing socio-biological boundaries, are being exposed to these rapidly evolving changes taking place in countries they visit. Their health is also influenced by the changes taking place in their society of origin. Simultaneously, there is an increase in new travelers from emerging economies, particularly in Asia, with their own characteristics, facing new challenges as they move abroad. The paradigm of travel medicine is changing rapidly, as the profile and origin of travelers are constantly evolving, and the distinction between travelers and migrants is becoming less clear. This presentation will address some of the issues travel health is facing in this rapidly changing world.

Financial aid
A. Magill

Abstract not available

Symposium 7: Regional infections

100
APTHC-0687
Rickettsia

J. Simon[1]
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Rickettsial disease is well represented in Asia/Pacific. All three major groups are found ie Spotted fever, Typhus group and Scrub typhus. The last, also known as Tsutsugamushi fever is perhaps the best known. In this presentation I will review the epidemiology. I will also discuss the use of doxycycline prophylaxis to prevent scrub typhus in travelers - especially those hiking in South-East Asia. Several illustrative cases will be discussed. especially the failure of clinicians to fully examine the patient in a search for eschars! The increasing resistance of Scrub typhus to doxycycline in Northern Thailand will be discussed together with the preferred alternative of Rifampicin therapy. Finally I will postulate on the increasing incidence of Rickettsial infections which we might expect with global warming and with suburban expansion.

101
APTHC-0801
HFMD/EV71

P. Lee[1]
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Since 1970's, enterovirus 71 (EV71) epidemics have been reported in several countries with a high mortality in young infants. Epidemics have occurred in many Asian countries since the late 1990's. Illness in fatal cases began with typical hand, foot, and mouth disease and deteriorated after a median of 3 days and was characterized by rapid onset of decreased level of consciousness, pulmonary edema and cardiovascular collapse. Most fatal cases expired within 24 hours after having been brought to a hospital. Clinical features and pathological findings of severe infections were compatible with brain stem encephalitis with neurogenic pulmonary edema. Although brain stem insult was the underlying pathogenic mechanism for the fulminant course, the direct

cause of death was severe myocardial failure in most cases that may be aggravated by inappropriate fluid challenge. EV71 continued to be a threat to children in Asia since then. It is also threatening young travelers coming to this area. Crowdedness appeared to be an important risk factor of severe illness. Hand washing and isolation of sick children may be helpful to some extent to control the epidemic. There is no effective treatment at present except for supportive measures. Several candidate vaccines are now in development.

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APTHC-0794
Melioidosis

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Melioidosis is infection with the saprophytic environmental bacterium *Burkholderia pseudomallei*. It is classified as a 'Tier 1' select agent (i.e. potential bioweapon), but more importantly is an increasingly recognised human and veterinary public health problem in parts of Asia and northern Australia, and is probably far more widespread but under-recognised. Most cases present during the rainy season. Infection may be acquired by inoculation, inhalation or ingestion. The majority of cases are immunocompromised, especially by diabetes mellitus, chronic renal disease, thalassaemia, steroids, alcoholism and liver disease, and chronic lung disease including cystic fibrosis. The incubation period varies from 2 days to 62 years. Most patients present with fever and bacteraemia, with primary or secondary foci (abscesses) in lungs, liver, spleen, prostate and skin or soft tissues, but any site can be involved. Localised infections also occur, with parotitis and lymphadenitis especially common in children. Melioidosis is well described in both short and long term travellers to endemic areas and should be considered in anyone who has ever visited the tropics presenting with severe sepsis with abscesses or pneumonia. Severe and even fatal infections have occurred in previously fit travellers. The organism is easy to culture from sterile sites (e.g. blood, pus, urine), but selective media are needed for other samples, so remember to warn the laboratory if the diagnosis is suspected. Serology may be useful in patients from non-endemic areas, but tests are poorly standardised and background seropositivity is high. Molecular diagnostics have not yet proved particularly useful. With good supportive treatment, including drainage of abscesses and management of metabolic disturbance, and optimal acute phase chemotherapy (ceftazidime or a carbapenem for at least 2 weeks), mortality can be reduced to

<10%. Relapses are not uncommon, so prolonged oral antibiotics (usually co-trimoxazole for up to 20 weeks) are recommended as 'eradication therapy'.

Destination 3: India

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APTHC-0811
India

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This workshop is to introduce attendees to the broad range of travel issues for travellers to India, discuss what preventive advice is appropriate to a range of travellers, and to consider in detail the approach to recommending chemoprophylaxis against malaria for travellers in India. Case studies will also be presented to highlight specific illnesses that travel medical practitioners should be aware of. It is intended that the workshop is interactive, with ample time for questions and discussion.

Free Communication 4: Late-breakers

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APTHC-0814
MEDICAL AID WORK IN THE PHILIPPINES AFTER TYPHOON "YOLANDA" – LESSON LEARNED BY THE ISRAELI DEFENCE FORCES MEDICAL DELEGATION

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On the 7 of November 2013 the typhoon "Yolanda" hit the Philippines causing more than 5000 fatalities and much damage to infra-structure. Soon after, several medical humanitarian delegations from different countries came to the Philippines to give medical and humanitarian aid. Among them an Israeli Humanitarian medical delegation of the IDF (Israel Defense Forces). Following request of the Philippines government, the team settled in the town of Bogo in Cebu province, which was damaged by the typhoon. The delegation reinforced the local medical staff at the local hospital and also built a field clinic located in front of the hospital building in order to increase the capacity to give medical care to the people who needs it. During the two weeks the medical team stayed in the area, we gave medical care to almost 2600 patients. The data on each of the patients that were seen and the work up that was done including laboratory and radiology tests and the treatment that was delivered was documented in a computerized system.

The purpose of this presentation is to share our experience in giving medical services in post natural disaster settings, in terms of the diverse clinical conditions that we encountered. We would also like to share the experience we had with seeing many patients with suspected pulmonary Tuberculosis (TB) and to describe the infection control issues that aroused and how we tried to handle them, in hope that our experience could be helpful for similar medical aid delegations in the future.

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APTHC-0822
MEASLES IN A VFR TRAVELER: SINGAPORE EX-PHILIPPINES

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Although measles remains endemic in many Asian countries, there appears to have been a large measles outbreak in the Philippines with infectious cases travelling internationally on aircraft while ill or in the incubation period. These cases have occurred in travelers visiting friends and relatives (VFR travelers) who were unvaccinated infants or susceptible adults. We describe here measles in an adult returned traveler with epidemiologic and genotypic linkage to the outbreak in the Philippines.

A previously healthy 32 year old Filipino man presented to Tan Tock Seng Hospital (TTSH) in Singapore on 14 January 2014 with a history of two days of fever, which was followed by cough, conjunctivitis and facial rash. Examination revealed classical clinical findings of Koplik's spots and a generalized morbilliform rash. He had just returned after travelling to the Philippines from 26 December 2013 to 8 January 2014, where he had visited friends and relatives (VFR) and attended several weddings. He had travelled to the cities of Manila, Lipa, Batangas, Cavite and Ayala Alabang (Muntinlupa), where measles outbreaks have been reported. His wife, who was 3 months pregnant, travelled with the patient and was exposed to the patient after his onset of illness, but was tested to be immune to measles.

Measles was confirmed by PCR from a nasopharyngeal swab sample, which belonged to genotype B3, the dominant measles genotype reported in Philippines in 2013. Three other recent imported cases of measles have been reported, all of which have also been found to be of genotype B3. Similar cases of imported measles have also been reported in Canada, Taiwan and New Zealand. This case highlights the risks of international spread of measles, as well as the need to maintain vigilance for secondary cases among susceptible patients, even in non-endemic countries.

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APTHC-0834
Emerging issues in TB in Vietnam and Asia-Pacific region

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Tuberculosis (TB), caused by the bacterium Mycobacterium tuberculosis, killed 1.4 million people each year all over the world in 2011. Vietnam is considered a country of high-TB, high-HIV and high-MDR TB burden (1). Vietnam is ranked 12th among the 22 high-burden countries and an estimated mortality rate 33/1000000 population (2). Directly Observed Therapy, Shortcourse (DOTS) was started in Vietnam since 1992 and covered the whole country in 2000 (3). In 2001, National Tuberculosis Control Program (NTP) was praised for meeting both of the global targets for tuberculosis control: 84% of cases were detected and 92% treatment success rate was reported, exceeding the targets of 70% detection and 85% treatment success (3). Vietnam NTP was established in 1957 with separate systems in the North and the South. After Vietnam reunification in 1975, the two programs were combined to form NTP. TB care was decentralised at district level. The cure rate did not exceed 40%. A new NTP was introduced in 1986 which followed WHO principles: 1) direct smear examination as the main diagnostic method; 2) uniform treatment regimens throughout the country; 3) continuous monitoring of case finding and treatment results; and 4) integration of tuberculosis control activities into the general health system. However, despite the good performance of NTP, the incidence of tuberculosis has not decreased substantially in the last decade. The reasons for this probably include a developing private sector with inadequate training in tuberculosis treatment and control, poor access to control services for certain high risk groups (drug users, prisoners, and temporary residents), an unregulated drug market with use of non-standard anti-tuberculosis drugs, and increasing prevalence of HIV infection. In summary, TB is still a huge public health problem in Vietnam although Vietnam has been considered to have an excellent tuberculosis control program since 2003 (3).

Symposium 8: Expatriates, humanitarian aid and occupational travel

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APTHC-0820
Preparing and managing the expatriate/missionary

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Expatriates, humanitarian aid/development workers and missionaries are groups of travelers that need specialized pre-travel health preparation. While they experience much the same range of illness and injury compared to other travelers, the nature of their activities and longevity spent travelling may put them at higher risk of specific travel-related morbidity. Their pre-travel work-up is often challenging due to a number of factors including: cost, late presentation, the need to prepare accompanying children and that long-term management of pre-existing medical conditions needs to be taken into consideration. In this symposium session I will summarise what we know about the health needs of these groups and present for discussion strategies to aid us in preparing them better for their travel.

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APTHC-0830
Challenges of supporting those who travel for work

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In recent years travelling abroad for work has become a common feature of many types of employment. Those who travel abroad for work represent an important group of international travellers, comprising both short and long-term travellers, across a range of occupations. They are a heterogeneous group, exposed to a variety of hazards, and as diverse as their backgrounds, are the

strategies for preparation, health management, and risk reduction in relation to assignments abroad.

Employers undertake great expense in sending their staff abroad, and ill health or injury in an employee is likely to have both reputational and economical consequences for the employer. This may include the cost of medical care, the cost of sickness absence, the cost of repatriation, and in some cases, litigation. The health and safety of those travelling for work is thus critically important for the employee, employer, and also for a successful work trip.

This presentation will review the challenges of supporting those who travel abroad for their work.

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APTHC-0818
Humanitarian aid to developing countries: management while on deployment

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International SOS is a worldwide medical and travel security services company. We help organizations protect their people across the globe. Our teams work 24/7 from more than 700 locations in 76 countries. Through our worldwide network of assistance centres, clinics, and health and logistics providers, we offer local expertise, preventative advice, and emergency assistance during critical illness, accident, or civil unrest.

Many non-governmental organizations (NGOs), governmental and UN agencies provide aid in regions or countries that lack the proper medical, communication and transportation infrastructures and may have limited public services. Employees working in these areas face endemic health and personal

safety risks. Before employees go abroad, it is essential for employers to adequately prepare them. While on assignment, employees may also need access to 24/7 medical, travel and security advice, and emergency help in the event of a crisis.

From an operational standpoint, our NGOs counterparts are senior medical doctors requesting specific medical assistance. They are the experts on the ground, and we may have to use their field knowledge to implement the appropriate action plan.

Safety and security are today humanitarian's workers first concern on the ground. Each humanitarian mission is unique and needs a fully dedicated, custom-made approach.

New infectious diseases (Avian Flu, MERS-CoV...) and others, which have been controlled historically, are now demonstrating increased virulence as a global public health issue. Humanitarian workers are facing the dilemma of delivering the relief to the needed population while at the same time protecting themselves. From an assistance perspective, medical evacuation of contagious patients will always be challenging.

New humanitarian challenges will lead to new medical partnerships at regional and international levels. Emerging technology and instant media coverage will increase the public's awareness, but will detrimentally shorten the timeframe in which decisions will need to be made.

Workshop 4: Practical management issues of traveler's diarrhea

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APTHC-0827
Practical management issues of traveler's diarrhea

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Travelers' diarrhea (TD) has been described for more than sixty years. During that time, the infectious etiology has been firmly established, along with the predominance of bacterial pathogens, leading to the effectiveness of empiric antibiotic treatment. In the 1980's, trimethoprim-sulfamethoxazole was the drug of choice for empiric treatment of TD, but increasing resistance of pathogens led to the adoption of fluoroquinolones for empiric treatment. In the 1990's, resistance to fluoroquinolones, particularly among Campylobacter species, was noted, starting in Thailand, and later in Nepal. Campylobacter was sensitive to azithromycin, and azithromycin is beginning to replace ciprofloxacin as the empiric drug of choice. However, some organisms are resistant to azithromycin. In addition, noroviruses are beginning to account of an increasing percentage of travelers' diarrhea presentations. In recent years, there has been concern about persistent symptoms after a bout of gastroenteritis, and this syndrome has been termed "post-infectious irritable bowel syndrome." This has led to an increased desire to be able to prevent TD. There is also a growing concern of the effect of antibiotic treatment on the overall bowel flora in the intestine. At one time, the approach to self-diagnosis and treatment of TD had become quite clear, but we are entering an era where a more nuanced approach may be necessary to diagnosis and empiric therapy.

ABC 3: Vaccines

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APTHC-0745
Vaccines

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Immunizations are a major part of pre-travel preparations. This workshop will address immunizations for travelers, using case-based approach. The case presentations aim to generate participation, questions, and discussion from the audience.

Objectives: 1) Discuss vaccine-preventable diseases associated with travel and the indications for immunizations. 2) Highlight recent updates on travel immunizations. 3) Describe some areas of challenge.

Plenary 4: One Health

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APTHC-0806
One Health & travel

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Recognizing that human and animal health, also ecosystem health, are inextricably linked, the *One Health Initiative* is 'dedicated to improving the lives of all species'. The *One Health Initiative* is a trigger for routine interdisciplinary collaboration and this is essential for travel health. One example: Medical doctors are unable to assess the risk of avian influenza without ornithologists and environmental specialists.

We are living in an age of mobile populations; the interaction between visitors, immigrants, and the local population is obvious. Many travel medicine publications document how infections were acquired by travellers, with those having the closest contact, particularly those visiting friends and relatives, being at highest risk. Concerned about our clients, we often neglect that transmission of communicable diseases by no means is one-way; travellers have spread pathogens globally, visitors resulted in outbreaks among non-immune remote populations, occasionally decimating those. Not only health risks are to be considered, there are also mutual benefits by the development of products.

Traditionally travel health professionals worry about zoonotic infections threatening their customers, some examples being campylobacter infection from poultry dishes, dengue, bird flu, and rabies. One health is a major component of food security and safety. Only recently has it been outlined that not only animals threat humans, that on the other hand nature-based ecotourism may result in some stress among primates and additionally there are concerns about human-to-animal transmission of infectious diseases.

Lastly, travel has an impact on the environment, both on the biophysical and the socio-cultural level. Tourism may also have clearly positive effects, for

instance by conservation of culture — UNESCO World Heritage sites — or of natural resources. No way does One Health want to stop all travel, but it promotes the 'doable' such as improving surveillance and response for instance for emerging diseases by a broader approach.

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APTHC-0833
One Health & emerging infections

R. van Doorn[1]
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The spectrum of human pathogens and the infectious diseases they cause is continuously changing through evolution and changes in the way human populations interact with their environment and each other. New human pathogens most often emerge from an animal reservoir, emphasizing the central role that non-human reservoirs play in human infectious diseases. Pathogens may also re-emerge with new characteristics, such as multidrug-resistance, or in different places, such as West Nile virus in the USA in 1999, to cause new epidemics. Most human pathogens have a history of evolution in which they first emerge and cause epidemics, become unstably adapted, re-emerge periodically, and eventually become endemic with the potential for future outbreaks.

When new threats emerge, public health systems rapidly identify cases and evaluate sources, clinicians provide early descriptive case reports, and laboratories develop diagnostics and characterise pathogens. Clinical science is markedly less agile and lacks the tools to answer key questions rapidly. Who is susceptible, and why? What are the mechanisms of disease? What are the sites and dynamics of pathogen replication? How can early cases be identified and stratified? What is the clinical utility of new diagnostics? What treatments might work? The International Severe Acute Respiratory and Emerging Infection Consortium (ISARIC) grew from the recognition that we have to do things differently, in the light of our experience during the epidemics of SARS, H5N1, H1N1pdm09, and also regional epidemics of enterovirus 71, dengue, viral haemorrhagic fevers. In this talk I will discuss the process and the drivers of emergence, species-jumping, briefly summarize current emerging regional threats and the way that ISARIC tries to get clinical science up-to-speed in outbreak situations using pre-approved open access study protocols.

Poster Session

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APTHC-0677
DONT GO NAKED

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International travel has been increasing exponentially.This is possible due to increase affordibility, opportunity and emergence of budget airlines. From this, we are facing an upsurge of travellers who are not insured. Unexpected illness and injuries placed both travellers and public hospitals under financial stress.

The presentation consist of case studies (road train,king hit) to reflect the unexpected occurences during travel and the cost involved in seeking medical assistance.

The message is to remind doctors to advise their patients of the need of Insurance for their travel.

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APTHC-0727
PILOT PROGRAM OF A NOVEL DELIVERY MODEL FOR PRE-BUSINESS TRAVEL HEALTH CARE

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A recent survey conducted using the GeoSentinel Global Surveillance System found only 29% of business travellers who developed a travel-related vaccine-preventable disease (VPD) had a pre-travel visit to a travel health provider. Additionally, it has been demonstrated that business travellers who receive advice from in-house or company-provided travel medicine practitioners have greater awareness and more accurate knowledge of travel health risks than those who visit their family physician or do not have a pre-travel consultation. This pilot program seeks to determine the increase in travel health risk awareness and decrease in incidence of self-reported travel-related VPD in a cohort of business travellers educated by certified travel medicine practitioners in a mobile travel health clinic.

The program will be conducted by private company, Global Travel Health (Brisbane, Australia) from 01 March 2014 to 31 August 2014. Business travellers will be recruited through referral from the travel and human resources managers of 20 Brisbane-based companies which regularly send staff to international destinations. Once a referral is received, the traveller will be contacted by telephone to arrange an appointment time for the mobile clinic to visit the workplace. The traveller will be emailed an online questionnaire examining pre-existing knowledge of travel health risks to complete prior to the appointment. Consultations will be conducted by the clinic doctor and all required/recommended immunisations and medications given at that appointment, with follow-up vaccine doses scheduled as necessary.

On return from overseas, each traveller will receive a post-travel questionnaire to determine change in knowledge of travel health risks and rate of self-reported travel illness. These results will be compared with the pre-travel questionnaire and with reported rates of illness from previous studies. Results of the pilot program will be submitted for publication in peer-reviewed journals and presentation at future travel health conferences.

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APTHC-0698
NEW DELHI METALLO-BETA-LACTAMASE-1 (NDM-1) PRODUCING ENTEROBACTERIACEAE BROUGHT TO JAPAN BY HEALTHY CARRIER TRAVELER: SIGNIFICANCE OF MULTIDRUG-RESISTANT BACTERIA SCREENING TEST FOR PEOPLE RETURNING FROM OVERSEAS

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The NDM-producing *Enterobacteriaceae* isolate was first reported in 2009. Although the first isolate was identified in Japan in 2010, these bacteria have only been isolated from seven patients, to date, and many of them had returned to Japan to continue treatment they had received overseas. We report the isolation of NDM-1-producing *Escherichia coli* from a Japanese traveler who, after having received treatment in India, returned to Japan in a healthy state. The patient was a 50-year-old Japanese man who had resided in India for approximately one year. In March 2013, he was diagnosed with bacterial pneumonia and administered ceftriaxone for 10 days. He was discharged without complications and visited our hospital for a health examination one week later. At the time of his visit, there were no appreciable clinical symptoms and chest radiography and blood testing showed no abnormalities. However, from a fecal culture test performed for screening, NDM-1 producing *E. coli* were isolated. As this man returned to India one week later, the spread of infection could not be confirmed. The detection rate of multidrug-resistant Gram-negative bacteria in Japan is low as compared with the United States, European countries, and other Asian countries. Considering the relatively high rate of multidrug resistant bacteria in travelers returning from Asia, we need to recognize the importance of proactive screening tests and preventive measures against infection in consideration of regionality when applicable travelers receive treatment in Japan, are required to care for the elderly and infants, or are in contact with immune-deficient people.

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APTHC-0708
THE PROBLEM OF THE RABIES POST-EXPOSURE PROPHYLAXIS AMONG JAPANESE TRAVELERS

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Objective
To assess the underlying problem of rabies post-exposure prophylaxis among Japanese travelers.

Methods
Retrospective chart review of travelers who had rabies post-exposure prophylaxis at a tertiary hospital. The study period was from June 1st, 2012 to December 31st, 2013.

Results
A total of 43 travelers were studied during this period. Twenty-six (60.5%) were male and 17 (39.5%) were female. Of the 43 travelers, 21 (48.8%) traveled to Southeast Asia, 11 (25.6%) to South Asia, 5 (11.6%) to East Asia, 2 each (4.7%) to sub-Saharan Africa and Mid-South America, and 2 (4.7%) to others. Twenty-one (48.8%) travelers started the rabies post-exposure prophylaxis during their travel as soon as possible, whereas 22 (51.2%) travelers started prophylaxis after they returned to Japan. In the former group, the period between the exposure and the first vaccination was 0.7 days on average, however in the latter group, the period was 7.1 days on average. In addition, they inoculated rabies immune globulin in 13 of 21 cases (61.9%) in the former group, but they did not inoculate in all cases of the latter group. Only one case of 43 travelers (2.3%) had inoculated pre-travel vaccine. Forty-one of 43 (95.3%) travelers had completed the course of post-exposure prophylaxis.

Conclusions
Many Japanese travelers do not have adequate information regarding rabies post-exposure prophylaxis. In most cases, they obtain the information for the first time at quarantine after returning to Japan. Therefore, more widely available information is needed and pre-trip education is strongly recommended.

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APTHC-0733
PERFORMANCE OF RAPID DIAGNOSTIC TESTS FOR PLASMODIUM OVALE MALARIA IN JAPANESE TRAVELERS

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Background: Rapid diagnostic tests (RDTs) have widely been used in the diagnosis of malaria. Although the effectiveness of RDTs for malaria have previously been described in many reports, the low performance of RDTs particularly for *Plasmodium ovale* malaria in travelers have rarely been reported.

Methods: This study was conducted among Japanese travelers who were diagnosed with malaria at the National Center for Global Health and Medicine between January 2004 and June 2013. Diagnosis of malaria by microscopic examination, RDT, and polymerase chain reaction were performed for all the patients. The RDTs used in this study were Binax NOW Malaria (Binax Inc., Scarborough, Maine, USA) and SD Malaria Antigen Pf/Pan (Standard Diagnostics Inc., Korea). We compared the sensitivity of the RDTs of *P. ovale* malaria with that of *Plasmodium vivax* malaria.

Results: RDTs were conducted in 9 *P. ovale* and 19 *P. vivax* cases. Compared to the results of microscopic diagnosis, the sensitivity of RDTs for *P. ovale* malaria (22.2%) was significantly lower than that for *P. vivax* malaria (94.7%).

Conclusions: The sensitivity of RDTs was not high enough to diagnose *P. ovale* malaria in our study. Thus, microscopic examination is necessary not to overlook *P. ovale* malaria.

No.	Year	Age	Sex	Country	Type of RDTs	Result of RDTs (T1/T2, P.f/Pan) *	Parasitemia (%)
1	2004	ND	F	Ghana	BN	− / −	0.030
2	2005	42	M	Senegal	BN	− / −	0.060
3	2006	24	M	Uganda	ND	ND	0.040
4	2007	24	M	Uganda	BN	− / −	0.040
5	2008	21	M	Uganda	SDMA	− / −	0.001
6	2009	22	F	Ghana	SDMA	− / +	0.080
7	2010	36	M	Uganda	SDMA	− / +	0.004
8	2010	23	F	Ghana	SDMA	− / −	0.012
9	2012	25	M	Uganda	BN	− / −	0.042
10	2013	33	M	Uganda	BN	− / −	0.003

	P. vivax malaria	*P. ovale* malaria	P value
Number of patients	19	10	
Age (mean ± SD)	30.6 ± 10.6	27.8 ± 7.4	0.379
Sex (male)	14	7	0.833
Areas to travel			
Africa	1	10	
Asia	14	0	<0.001
South America	4	0	
Average parasitemia (%)	0.234	0.031	0.002
Positive by RDTs (%)	18/19 (94.7)	2/9 (22.2)	<0.001
BN (%)	11/12 (91.7)	0/5 (0)	<0.001
SDMA (%)	7/7 (100)	2/4 (50.0)	0.039

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APTHC-0758
INVESTIGATION AND ANALYSIS OF MOSQUITO BORNE DISEASE AT QINGDAO AIRPORT

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Abstract [Objective] To provide foundations of prevention and control of mosquito borne diseases at the port through epidemiological investigation on 5 cases of imported mosquito borne infectious disease cases and analysis of the current situation and features of mosquito borne diseases epidemic on qingdao airport.**[Methods]** To find the plague suspects through epidemiology survey and rapid screening , and to determine the infectious disease patients by sending the positive for further serological detection. **[Results]** There were 5 cases of imported mosquito borne diseases at Qingdao airport in 2013, including 1 case of malaria, 4 cases of dengue fever. The results of epidemiological investigation show, that one malaria patient from Africa, and four dengue fever patients from Southeast Asian countries. They had the history of mosquito bites. One case of them was reported malaria symptoms by the hospital, two cases were founded by pot medical inspection, one case was infrared body temperature monitoring found, one case was individual declare. They have all been done the investigation of epidemiology and rapid screening. The rapid screening results show positive, and the further serological tests diagnosed. **[Conclusion]** At present, the risk of mosquito borne diseases in China is increasing, the epidemic situation of kinds of communicable diseases transported from abroad is becoming more severe. The inspection and quarantine institutions should strengthen the medical inspection efforts and focus on application of rapid screening, strengthen cooperation with the infectious disease hospital, health center and other departments, carry out a wide range of the entry-exit personnel prevention knowledge propaganda, enhance the initiative to declare the conscious symptom of passengers, so as to effectively prevent the spread of imported infectious disease.

key words: mosquito borne disease; Imported; Epidemiological

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APTHC-0764
A CASE OF FULMINANT AMOEBIC COLITIS IN A RETURNING TRAVELER

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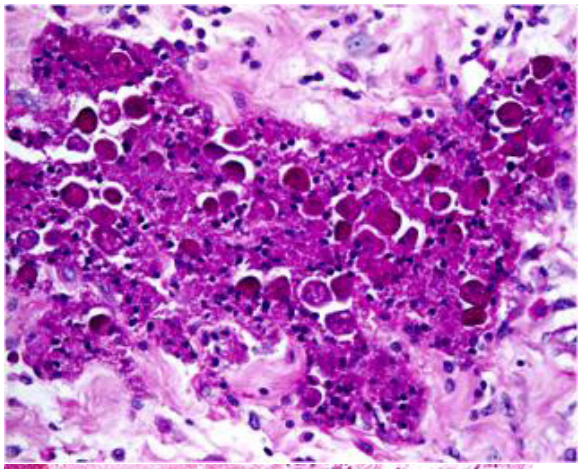
A 70-year-old Indian man with history of hypertension was admitted to a tertiary hospital in Hong Kong two days after coming back from a 5-month travel to multiple cities in India for business. He presented with four days' history of fresh PR bleeding, diarrhea and abdominal pain. There was low grade fever on admission and the patient was treated with ceftriaxone, metronidazole and ciprofloxacin empirically. He deteriorated acutely 4 days later with septic shock and multi-organ failure requiring ICU admission for ventilatory and dialysis support. Blood culture at that time grew *Candida glabrata* and ESBL-producing *E.coli*. Physical examination showed a distended abdomen with signs of peritoneal irritation. Urgent laparotomy showed ischaemic colitis with diffuse gangrenous changes over the whole colon and multiple ulcers in the rectum with evidence of peritonitis. Total colectomy with ileostomy was performed. Histology of the colon showed extensive ulceration with transmural gangrenous changes and acute serositis. Large number of amoeba highlighted by PAS stain (figure 1) was seen in the ulcer slough, intestinal wall and focally at the subserosal soft tissue. Classical flask-shaped ulcers were seen and there was evidence of vascular permeation (figure 2). Ziehl-Neelsen stain, Grocott, PASD, and immunohistochemical stains for CMV and HSV were all negative. Peritoneal swab grew ESBL *E.coli*, *Enterococcus* species and mixed growth of anaerobes. There were no evidence of extra-intestinal abscesses on computed tomography. HIV serology was negative. The patient received a course of intravenous metronidazole 500mg Q8H followed by oral diloxanide 500mg tds for the colonic amoebiasis and a course of broad-spectrum antimicrobials for the secondary bacterial and fungal bloodstream infections. He eventually recovered after a prolonged course of hospitalization and rehabilitation. This case report highlighted the importance of timely surgical

intervention in addition to antimicrobial treatment in the management of acute fulminant amoebic colitis with complications.



A deep flask-shaped ulcer involving the muscularis propria

Vascular permeation is evident

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APTHC-0778
ENCEPHALITIS POST HAJJ (PILGRIMAGE): A CASE REPORT

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Japanese encephalitis (JE) is a zoonotic viral disease that causes neurological infection, transmitted by mosquito as their vector (*Culex tritaeniorhynchus).* Neurologic manifestations range from subtle changes in behavior to serious problems, including blindness, ataxia, weakness, and movement disorders. JE is among the most important viral encephalitides in Asia, especially in rural and suburban areas. Approximately 3 billion people currently live in areas endemic for Japanese encephalitis; these areas extend from Pakistan to maritime Siberia and Japan. Transmission of this disease may occur all year in some tropical areas like in Indonesia. The presence of JE in Indonesian people has been described according to their clinical manifestation and serologic test result. The last update shows that JE in Bali have become hyperendemic while they were usually sporadic.

We reported a case of possible Japanese encephalitis diagnosed in Jakarta, Indonesia, in female 48 years old with chief complain of deteriorating malaise since 2 days before hospital admission, accompanied by recurrent fever, disorientation, flaccid paralysis, non-itchy rash at the back, seizures, tremor, neck rigidity, and severe headache. This patient had a history of travelling to Saudi Arabia for Hajj Pilgrim and had received meningococcal vaccine. She was initially diagnosed with meningitis TB in remote area in Sumatera, after experienced of DIH and drug eruption due to the TB treatments; she was referred to our hospital. After gone through re-evaluation and analysis on symptoms, signs and laboratory results in our hospital; particularly her lumbar puncture reveals normal opening pressure, clear fluid appearance, a slight increased in protein cells with domination on mononuclear cells of 10-500 cell/mm^3. We diagnosed her with JE infection and still waited for the result of virus culture.

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APTHC-0779
MALARIA IN DOMESTIC TRAVELLERS IN INDONESIA: A SERIAL CASE REPORT

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Indonesia is known as an endemic area for malaria. However, inside the country, not all area is actually endemic for malaria. Some part of Sumatera, the capitol Jakarta, Bali, some area of Celebes do not have the Anopheles mosquito, therefore the chance of contracting the disease while you were visited those places is small. In contrary, people that live in a non-endemic area might be travelled to Flores, Papua, Lampung , etc. , whereas malaria is endemic. Those domestic travellers may contract diseases during travel and for malaria due to long incubation period for some species, then the signs and symptoms will be developed while they were already back home. In addition, signs and symptoms of malaria are similar to many other acute febrile illnesses like dengue fever, typhoid fever, acute hepatitis or leptospirosis; late diagnosis lead to severe malaria and increase the risk of mortality.

We present a serial case of late diagnosis of malaria in Jakarta, from a domestic traveller that visited endemic area for business reasons. All cases were already admitted to intensive care unit while consulted to our Divisions, due to severe presentation of malaria. One case with cerebral malaria treated initially for CVD non -hemorrhagic, one case with prolonged thrombocytopenia treated for dengue and one case with fever of unknown origin with icteric and seizure. All cases were positive for severe malaria and treated with artesunate followed with artemisinin-based combination therapy. All patient was discharged in a good condition.

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APTHC-0697
CURRENT TREND OF PRE-TRAVEL VACCINATION IN TRAVEL CLINIC AT AL AHLI HOSPITAL DOHA QATAR

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The importance of pre-travel advices consultation with vaccine-preventable diseases realization is increasing. Few data are available about how travellers perceive risks associated with travel and about their awareness in vaccines. We'd like to report the current trend of pre-travel vaccinations in our clinic.

Methods: A prospective study was conducted from the date we opened the clinic August 2011 till August 2012.

Results: travelers visit our clinic of all age groups**515** Age all most of them were 31 – 40 years old **154**(30%). Most of them Europeans**218** (42%). Africa and Asia the most geographic region, Kenya, Tanzania, Thailand was the most common destination countries. **450** (87% consulted less than four weeks prior to departure date. and the reason for the trip is leisure (tourism). **460** (87%) Hajj Pilgrims**, 25**(5%) work/ business **20**(4%), hiking **10**(2%) The total number of visitors: 515, the total number of vaccines: 799 **Variety** of vaccines were given the types and priority of vaccines to be administered will depend on the traveler's intended life style during his/her stay and the length of the trip. Vaccine against Typhoid **151** (30%) followed by Yellow Fever 134(27%), Hepatitis A **109**(22%) hepatitis B 109. Immunization updates**185** (26%). Meningococcal meningitis 62 (12%)

Conclusions: KNOWLEDGE OF TRAVEL-RELATED INFECTIOUS DISEASES IN TRAVELLERS is poor. After we explained the necessity of the vaccination to the visitors to our clinic, they understood it well and became willing to receive the imported vaccines as well. Therefore we believe that further education program regarding pre-travel vaccination is urgently needed

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APTHC-0728
PROFILE OF HEPATITIS B VACCINATION AMONG INDONESIAN MIDDLE-CLASS ADULT POPULATION

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Background: Indonesia is among high-endemic countries for hepatitis B virus infection. National hepatitis B vaccination in Indonesia was available at no cost for infants since 1997. Adult vaccination has been entirely done on a voluntarily basis at varying cost depends on the vaccine's price. Evaluating medical check-up patients in a private hospital provides a good opportunity to study vaccination profile since this middle-class population can afford all adult recommended vaccines.

Objective: to evaluate hepatitis B vaccination profile among middle-class adult population.

Method: This was a cross-sectional study among medical check-up patients aged more than 18 years old in a private hospital in Jakarta between January and December 2013. Demographic and vaccination data were obtained from patients' medical record and include sex, age, vaccination history, hepatitis B antigen (HBsAg) and anti-HBs profile.

Results: There were 1014 medical check-up cases retrieved; 694 (68.4%) were men. Patients' mean age was 43 years, ranging from 20 to 88 years old. Six hundred and sixty-eight (65.9%) patients reported at least one shot of vaccine during their lives. Hepatitis B vaccination was reported in 379 (37.4%) of patients. There were significantly more women than men who had prior hepatitis B vaccination (42.5% vs. 35.0%; p 0.022; chi-square test). These patients did not necessarily have complete routine childhood vaccinations, such as vaccines against tuberculosis, diptheria-pertussis-tetanus (DPT), poliomyelitis, and mumps-measles-rubella (MMR), which were reported in 70.2%, 58.0%, 52.5%, and 21.1%, respectively. HBsAg was positive in 24 (3.7%) of patients; 3 of them had prior hepatitis B vaccination. Anti-HBs was found in 326 patients; 183 (69.1%) had hepatitis B vaccination.

Conclusion: Hepatitis B vaccination among middle-class adult population is about 37%. A substantial portion of these people does not have complete childhood routine vaccination. Some people develop adequate immunity after vaccination while others may acquire it naturally.

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APTHC-0737
ADULT VACCINATION PROFILE AMONG MEDICAL CHECK-UP PATIENTS IN A PRIVATE HOSPITAL IN JAKARTA

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Background: During the last few years, general medical check-up (MCU) is a quite 'booming' activity in Indonesia. Detection of non-infectious illness through routine MCU is critical to protect the nation against disease burden and the related health-costs. On the contrary, the approach is not in line for the preventable infectious diseases. To stay healthy, vaccination is one of the approaches, not only in children but also in adults.

Objective: To evaluate vaccination profile among healthy adults underwent MCU in a private hospital in Jakarta.

Method: Healthy adult patients visited for MCU in Medistra Hospital, South Jakarta, was consecutively enrolled in a cross-sectional study between January and December 2013. Data were obtained from the medical record which included demography and vaccination history during their life times.

Result: A total of 1014 cases were retrieved; the majority of patients was male (69%). Mean age was 43 (min-max, 20-88) years old. History of vaccination was reported by only 668 patients (66%). Most of them were routine childhood vaccinations, i.e. BCG (51%), hepatitis B (37%), DPT (33%), poliomyelitis (28%), and MMR (9%). Older people might also report smallpox vaccination (10%). Recent adult recommended vaccinations consisted of HPV (2%), influenza (1%), and pneumococcal disease (0.4%). Less than 1% of travel-related vaccinations were observed, i.e. meningococcal meningitis (0.9%),

typhoid fever (0.4%), yellow fever (0.2%), cholera (0.2), and Japanese encephalitis (0.1%).

Conclusion: These data shows that most of adult Indonesians only have a history of childhood vaccination with very low adult vaccination coverage. Indonesian physicians and government need to be more proactive in promoting adult vaccinations. Routine medical check-up is a good chance to promote adult vaccination. Insurance provider and travel agents could also be asked to take more active part in promoting adult vaccination among their clients to reduce disease burden and the related health costs.

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APTHC-0747
IMMUNIZATIONS FOR CHILDREN AND TRAVELERS IN CHINA

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Two systems are involved in access to immunizations in China. Normally, the Chinese Center for Disease Control and Prevention (CCDC) is responsible for national implementation of the World Health Organization (WHO) Expanded Programme on Immunization (EPI) and also for the rabies vaccination program. The Chinese Inspection and Quarantine (CIQ) bureaus, affiliated institutions of Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), provide health services for international travelers including travel vaccinations. The CCDC and the CIQ are two independent administrative systems although both have functions that include the provision of immunizations. Immunization clinics of the CCDC are located within

Community Centers for Medical Services (CCMSs), and immunization clinics of the CIQ are located within International Travel Healthcare Centers (ITHCs).

A comparison between the two systems will make it easier for international travelers to understand how to access immunization services when it is necessary in China. For example, JEV vaccine is one of the vaccines included in the EPI, administered by the CCMS, so most of the travel clinics (ITHCs) have not stocked it for travelers. Most of CCMS clinics that have the vaccine do not offer it to travelers. Some CCMSs may have rabies vaccines for pre-exposure vaccination, but only clinics and hospitals that have been verified by CCDC for the management of canine-induced injuries can offer services including wound management, rabies immune globulin (RIG) injections and post exposure rabies vaccination doses. These facilities are not distributed uniformly in all provinces in China. Travelers may consult the local ITHCs for more information.

This article also lists some contact resources for international travelers. Although a lot of Chinese websites show vaccination information, only the governmental website of CCDC (Beijing), the website of Shanghai CDC and the website of Shanghai ITHC have prepared English information for international travelers. Travelers may contact local ITHCs to get more information for themselves and their children.

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APTHC-0756
RABIES PRE-EXPOSURE IMMUNIZATION (PREP) OF INTERNATIONAL TRAVELERS IN SHANGHAI

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Background
Travelers to countries where rabies is endemic may be at risk of rabies exposure due to their occupation or travel-related activities. For sound prevention strategies, rabies pre-exposure immunization (PrEP) is recommended for these particular subgroups of the population. We have assessed PrEP of international travelers visiting a travel clinic in Shanghai.

Methods
Data of this retrospective cohort study were drawn from the 2009-2013 medical charts of international travelers who came for pre-exposure rabies prophylaxis (PrEP) at the Shanghai International Travel Healthcare Center (SITHC).

Results
A total of 579 international travelers requesting PrEP was studied: 354 of the travelers were males compared with 225 females(61.14%vs38.86%,P<0.05).The number of unmarried ones was 330 while married ones was 249(56.99%vs43.01%,P>0.05). Among these visitors, 464(80.14%) were over 15 years old(P<0.05). The number of people asking for a PrEP intending to stay in an endemic area was 362(62.52%); those with a work-related risk was 68(11.74%); those people whose purpose was solely travel related was 149(25.73%). As expected, apart from the 14.16%(82) of those coming from developing countries, 85.84%(497) were all from developed countries(P<0.05).The number of travelers to countries in high risk areas was comparably higher than those in middle or low risk areas (93.61% vs 3.80%, 2.37%.p<0.05).

Conclusion
Health awareness and attitude of pre-exposure rabies prophylaxis vary among people and can be influenced by certain factors. PrEP is an important decision for each traveler visiting endemic areas.

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APTHC-0790
MEASLES, MUMPS, RUBELLA, VARICELLA (MMRVZ) AND HEPATITIS B (ANTI-HBS) IGG SEROPREVALENCE IN UNIVERSITY ENROLLED HEALTHCARE STUDENTS, MELBOURNE, AUSTRALIA

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The aim of this study was to describe the seroprevalence of MMRVz and anti-HBs IgG in a sample of healthcare students presenting for pre-vaccination assessment of their occupational health immunisation status.

A pilot audit of the medical records of healthcare students who had presented for review of their pre-vaccination MMRVz and Hep A/B immunostatus in 2013

was undertaken. Age, sociodemographic characteristics and information pertaining to previous illness/vaccination history was extracted from their medical notes. Serum specific IgG levels for MMRVz and anti-HBs levels were measured in each of the students. Seropositivity was defined by the following laboratory measures: measles IgG– detected; mumps IgG – detected; rubella IgG levels ≥ 10 IU/ml; varicella IgG – detected; HBsAb ≥ 20 mIU/ml.

A total of 41 records were extracted. The mean age of subjects was age = 22.7 yrs (min = 16; max = 33 yrs). Nineteen (63%) of the 30 students for whom birth place was noted, were recorded as having been born overseas. MMRVz seropositivity were respectively 70%, 65.9%, 70.7% and 87.5%. Only 36.6% were seropositive to all three MMR antigens; 63% required at least one dose of MMR vaccine. Of the 4 students seronegative to Vz, all had no history of previous varicella; three of these students were born overseas. The seropositivity to anti-HBsAb was 49%; a further 12.2% had borderline immunity to Hep B.

More than half the healthcare students presenting for assessment of their occupational health immunisation status were born outside of Australia. A large proportion (63%) of these students lacked immunity to at least one of measles, mumps and rubella antigens. More than half (51%) the students had no immunity to hepatitis B. We will further analysis these data to determine whether the place of birth has any significant bearing on the seropositivity status of these students.

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APTHC-0701
RABIES IN BANGLADESH AND NEW INITIATIVES FOR PREVENTION AND CONTROL

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Rabies remains as a serious public health problem in Bangladesh. It is highly prevalent in Africa and Asia. In Bangladesh, there is an estimated 200 thousand animal bites and 2000 human rabies annually. Except of the few pet most (83%) of the 1.2 millions dogs are stray and unvaccinated. Until July 2010, the existing rabies control strategies were namely infrequent inhuman dog culling by the local government agencies, animal bite management by nerve tissue vaccines (NTV) and limited use of tissue culture vaccine (TCV). Then Bangladesh started modern animal bite management initially at National Infectious Disease Hospital in Dhaka and by 2012 it has been expanded in all 64 districts of the country with trained health staffs and free vaccines. The activities recently carried out were namely updating national rabies elimination strategy, guideline for animal bite management (ABM), national action plan for mass dog vaccination (MDV). Achieving herd immunity through MDV is believed to be one of the preferred method for rabies elimination. Along with other key strategies, MDV has been adopted as the most important component for rabies elimination in Bangladesh. Bangladesh piloted MDV in Cox's Bazar municipality in 2011 and scaled up it in 54 of 64 district municipalities in the country. Government of Bangladesh stopped the production of NTV in October 2011.

Communicable Disease Control Unit of Directorate General of Health Services has been orchestrating the rabies elimination activities with assistance of two other ministries, international organizations and development partners by adopting the concept of **One Health** approach. Bangladesh is moving with a plan to make rabies free status by the year 2020 by adopting following strategies: ABM, MDV, dog population management, advocacy communication social mobilization, strengthening surveillance mechanism and operational research.

Key words: Rabies, New initiatives, Prevention and control, Tissue culture vaccine

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APTHC-0713
EPIDEMIOLOGICAL CHARACTERISTICS AND RELATED FACTORS ON THE FOUR KINDS OF INFECTIOUS DISEASES AMONG THE ENTRY-EXIT PERSONNEL AT HUNAN PORT IN CHINA

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Methods: In this study, we selected Entry-exit Personnel received healthy check-up in Hunan international travel health center during January 1, 2007 to December 31, 2012 as the research object. The object monitoring serum samples was collected for HIV antibodies (ELISA screening method, protein blotting confirmed) , syphilis (TRUST Act screening , TPPA recognized) , hepatitis B surface antigen (ELISA method) testing, hepatitis C antibody (ELISA method) testing, and physical examination and serological tests for infectious diseases. Epidemiological case investigation would be carried out if found positive. The content of the research mainly included demographic characteristics epidemiological characteristics and infection status of four kinds of major infectious diseases (HIV , syphilis , hepatitis B , hepatitis C) of Entry-exit Personnel in Hunan Province.

Results:A total number of 72,316 received healthy check-up at Hunan port from 2007 to 2012. Male accounted for 79.7%, and the male to female ratio was 3.9:1. Their age were mainly 30-49 years old, accounting for 75.3%. 63,722 people were Chinese nationals personnel, accounting for 88.1%. 34,755 people were laborers, accounting for 48.1%. Number of Entry-exit Personnel showed an increasing trend from 2007 to 2012. For the total number of 72,316 people, 5,266 cases were diagnosed as infectious diseases, and hepatitis B surface antigen positive was the most, accounting for 82.9%, followed by treponema pallidum antibody positive (9.0%), Hepatitis C antibody positive (7.5%), HIV antibody positive (0.6%). For the total number of 72,316 people, 4,364 cases were diagnosed as HBsAg positive, infection rate was 6.03%; 396 cases were diagnosed as HCV positive, infection rate was 0.55%; 473 cases were diagnosed as syphilis positive, infection rate was 0.65%; 33 cases were diagnosed as HIV positive, infection rate was 0.05%.A total number of 5266 cases of four types of infectious diseases, the overall infection rate was 7.28%. Multivariate analysis showed that males (OR =2.512,95% CI :1.758-3.552), personnel category of foreign marriage (OR =1.507,95% CI :1.430-1.589), travel to visit relatives (OR = 1.502,95% CI :1.405-1.708), laborers (OR = 1.503,95% CI :1.426-1.584) and crew (OR=1.205,95%

CI:1.160-1.252), and low age (OR = 1.479,95% CI: 1.402-1.559) were the influencing factors of 4 kinds of infectious diseases at Hunan port.

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APTHC-0715
A RETROSPECTIVE REVIEW OF ENTERIC FEVER AND INVASIVE SALMONELLOSIS IN A TERTIARY HOSPITAL IN SINGAPORE

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Objective: Salmonellae are common enteric pathogens and important causes of foodborne illness. It can also cause bacteraemia, abscesses and complicated endovascular infections. Increasingly, resistance to first line antibiotics is reported. We assess the risk factors associated with complicated salmonellosis over eight years in our institution.

Methods: A retrospective review of all patients with salmonella bacteraemia between 2004 and 2012 was identified. Demographics and clinical outcomes of complicated and uncomplicated cases were analysed.

Results: There were 18 typhoidal cases (10 *Salmonella typhi*, 8 *Salmonella paratyphi)*, and 88 non-typhoidal cases. The mean time to presentation was 11.5 (SD 14.4) days. 94.4% (17/18) of the typhoidal salmonellosis were imported. Only one typhoidal case had a splenic infarct. 23.6% (25/106) of bacteraemia were complicated. Patients with complicated infections had a higher mean age (60.3 versus 52.1; P=0.06), were more likely to have diabetes (P=0.02) and chronic heart failure (P=0.01), had longer mean length of hospitalisation (26.1 ±19.6 versus 14.1± 11.1days; P=0.007) and more likely to receive intensive care (24.0% versus 4.9%; P=0.004) although the duration of ICU stay was not significantly different (Mean 3.83 versus 3.75; P=0.95). Mortality rate was similar (32.0% versus 19.8%; P=0.20).

The overall antibiotic resistance rate was low. All isolates were sensitive to ceftriaxone. None were resistant to ciprofloxacin, 1.9% (2/106) had intermediate susceptibility to ciprofloxacin, 2.8% (3/106) were resistant to nalidixic acid and 0.9% (1/106) was intermediate to nalidixic acid.

Conclusions: The cases of typhoidal salmonellosis in our institution were mainly imported and predominantly uncomplicated. Patients with complicated salmonellosis had longer hospital stay and were not limited to the immunosuppressed host. Antibiotic resistance was not a major problem.

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APTHC-0734
TREATMENT SEEKING BEHAVIORS OF DENGUE PATIENTS DURING THE 2013 DENGUE EPIDEMIC

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Background: Delays of dengue treatment may result in fatal outcome. This study aimed to determine treatment seeking behaviors of dengue patients in 2013, a high epidemic year.

Methods: Medical records of adult dengue patients treated at the Hospital for Tropical Diseases (HTD) in monsoon (June-October) in 2012, a low epidemic year, and 2013 were retrospectively reviewed. Care seeking behaviors including demographics, days from fever onset to treatment, prior medical treatments, dengue in friends/relatives and sources of finance were compared between the 2 years.

Results: Of 210 patients (105 per year) enrolled, no statistically significant differences in demographics were observed. (Table 1) However, days from fever onset to the first visit (mean ± SD) were 4.67 ± 1.41 in 2012 and 4.21 ± 1.57 in 2013 (p = 0.03). DF: DHF ratio, rate of admission and bleeding were not significantly different in both years. Patients delayed seeking treatment (≥5 days after fever onset) were 41.9% in 2013 and 53.3% in 2012. Female gender was statistically associated with care seeking delay (p=0.01). **Conclusions:** Dengue patients sought medical care 0.46 days earlier in 2013. However, significant percentages of patients still delayed seeking treatment in both years. Early care seeking at appropriate health facilities should be included in public health education messages.

Funding: WHO-THAILAND

Table 1: Demographics of dengue patients

	2012 N=105	2013 N=105	p-value
Age (year, mean ± SD)	28.02 ± 13.94	30.87 ± 14.13	0.14
Female (%)	55.2	52.4	0.68
Bangkok (%)	77.1	83.8	0.22
Source of finance (%)	61.0	57.1	0.28
Universal health coverage			
Civil servant	27.6	21.0	
Out of pocket	11.5	21.9	
Having underlying diseases (%)	24.8	21.9	0.62

Table 2: Characteristics of dengue patients at HTD in 2012 and 2013

	2012 N=105	2013 N=105	p-value
Days from onset to first visit:	4.8		
1-2		12.4	0.08
3-4	41.9	45.7	
≥ 5	53.3	41.9	
Place of first visit (%):			
- Tertiary hospital	39.0	41.9	0.22
- Private hospital	23.8	16.2	
- Private clinic	18.1	16.2	
- HTD	13.3	21.9	
- Other	5.8	3.8	

Table 3: Factors associated with early and delay of treatment seeking time

	1-4 days (n=110)	≥ 5 days (n=100)	p-value
Age (year, mean ± SD)	29.47 ± 14.26	29.41 ± 13.93	0.97
Female (%)	45.5	63.0	0.01
Source of finance (%): UC	53.6	65.0	0.42
Having underlying diseases (%)	22.7	24.0	0.83
Dengue in friends/relatives (%)	37.0	31.9	0.51
Travel history (%)	40.4	46.2	0.40
History of vomiting (%)	48.2	46.5	0.80
History of bleeding (%)	19.1	22.0	0.60
DF (%)	76.4	82.0	0.32

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APTHC-0738
EPIDEMIC SITUATIONS OF HEMORRHAGIC FEVER WITH RENAL SYNDROME (HFRS) OCCURRING IN THE THREE NORTHEASTERN PROVINCES AND ITS PORT REGIONS IN CHINA

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Objective: To explore epidemic situations of Hemorrhagic Fever with Renal Syndrome (HFRS) occurring in the three northeastern provinces in China. **Methods** Analyze the epidemiological characteristics and the current status of HFRS occurring in the three northeastern provinces and its port regions. **Results** HFRS epidemic situations are mainly distributed in China (accounting for 91% of the total cases), Russian Far East which adjoin the three northeastern provinces of China, Korean Peninsula and Japan (accounting for 2%). In China, the three northeastern provinces are the HFRS epidemic areas mainly, and now occurring 8~10 thousand cases per annum, accounting for 25% of the total cases of China in the corresponding period. The three northeastern provinces is surrounded by the HFRS high incidence areas, such as Hebei Province, Shandong Province, Russian Far East, Korean Peninsula

and Japan. The above areas are all important trade partners of this area. With the gradual implementation of all the measures of rejuvenating the old northeastern industrial base, the three northeastern provinces will work more closely with the above areas in trade and travel field, moreover, by means of transport, the input or output of HV will increase obviously. **Conclusion** We should enhance the surveillance of HFRS in the three northeastern provinces, especially its port regions, and prevent HFRS epidemic situations from spreading over a long distance.

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APTHC-0739
SPECTRUM OF TRAVEL-RELATED ILLNESS AND RISK ASSESSMENT IN TAIWANESE TRAVELERS BETWEEN 2008 AND 2012

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Background: The surveillance and health education for travel related-illness becomes an important issue with continuous increase of international travels. This analysis is to profile the risks of infectious diseases among travelers.

Method: To determine the risk of travel-related illness, databases of Centers for Disease Control (CDC), Republic of China (Taiwan), which collected surveillance and investigating data from National Notifiable Infectious Diseases Surveillance System and National Syndromes Surveillance System during 2008 to 2012, were used. Annual statistical reports of travel survey published by National Immigration Agency and Tourism Bureau also serve to estimate the risks of travel-related illness.

Result: In total, there are 61,135 (1.3‰) travelers with symptoms and 1,396 (0.03‰) confirmed cases with national notifiable diseases out of 45,846,825 outbound travelers. Among the confirmed cases, more than half (55.1%) are infected by dengue fever, followed by shigellosis (16.3%) and acute hepatitis A infection (7.2%). The top three visiting sites are Southeast Asia (74.6%), East Asia (12.8%) and other regions of Asia (7.2%). Speaking of purpose, travel abroad on business accounts for 33.4%, visiting friends and relatives (VFRs) for 19.8%, and group tourism for 19.2% among all of the cases. This analysis finds that the highest risks of occurring travel-related illness during travel abroad are (1) travelers visiting in Southeast Asia (OR=15.3, 95% CI:

13.6-17.4) in terms of visiting sites; (2) travel abroad for other activities (religious ones, volunteer/aid worker, others) (OR=35.2, 95% CI: 29.3-42.5) in terms of purpose, and (3) 20-29 years old travelers (OR=1.9, 95% CI: 1.7-2.1) in terms of age.

Conclusion: Destination, purpose of travel and age proportionately attribute to the risk of occurring travel-related illness during travel. This study shows that travelers visiting Southeast Asia, travel for other activities (religious ones, volunteer/aid worker, others), and aged 20-29 years have the highest risk in each categories.

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APTHC-0743
STATISTICAL ANALYSIS ON SURVEILLANCE OF HIV INFECTION AND EPIDEMIOLOGICAL SITUATIONS AMONG ENTRY-EXIT POPULATION AT DALIAN PORT

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Objective Learn AIDS Epidemiological situations and the high-risk behavior of those infected among entry-exit personnel at Dalian port, as effective monitoring and preventing the spread of AIDS and provide scientific basis. **Methods** Surveillance data and epidemiological findings of AIDS to classify statistics and comparative analysis among entry-exit personnel at Dalian port, from January 2010 to October 2013. **Results** A total of 145,112 people for HIV medical monitoring from January 2010 to October 2013, detection of HIV-positive in 22 cases,whose main occupation are imported labor personnel, the output of the service personnel and crew. Of which 54.54% of people have premarital sex; 36.36% of people with multiple sexual partners; 27.27% of people admitted MCC history tour; 9.1%of people are gay; only 4.54% of the people are receiving regular treatment. **Conclusion** The main reason of HIV infection are foreign land occupation and high-risk sexual behavior of entry-exit personnel, HIV surveillance on them should be strengthened. We should increase publicity and education on health knowledge of the class of people to improve their self-awareness, and thus develop appropriate interventions.

Key words: HIV infection; monitoring; high-risk behavior;Entry-exit population

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APTHC-0748
SURVEILLANCE ON MALARIA, DENGUE FEVER, JAPANESE ENCEPHALITIS B, CHIKUNGUNYA FEVER AMONG RETURNED TRAVELERS WITH FEVER IN SICHUAN PROVINCE IN 2012

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0bjective To screen returning Chinese international workers for selected insect-borne infectious diseases which may cause a public health risk in Sichuan, specifically malaria , dengue fever, Japanese encephalitis B, chikungunya fever

Methods Blood samples were collected among 257 returned travelers who had fever on arrival during 2012 for investigating evidence of malaria , dengue fever, Japanese encephalitis B and chikungunya fever. Different Lab methods were used including microscopic examination, gold colloidal test, ELISA and RT-PCR test.

Results The infected rate of malaria among the returnees was 2.62%. All infected people were workers returned from Africa. No positive case of dengue fever, Japanese encephalitis B or chikungunya fever was found in 2012.

Conclusion The main risk for mosquito-borne disease among the returnees in Sichuan province is malaria, especially falciparum malaria. An important target for surveillance of infectious diseases is returned labourers, especially the returnees from malaria endemic areas in Africa. Although no infected case of dengue fever, Japanese encephalitis or chikungunya fever did was found in 2012, the potential risks still exist.

Key words Returned travelers, Returned labourers, Malaria, Dengue fever, Japanese Encephalitis B, Chikungunya Fever, Epidemiological surveillance.

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APTHC-0749
ANALYSIS OF EPIDEMIC TREND OF SYPHILIS AMONG ENTRY-EXIT PERSONNEL AT CHENGDU SHUANGLIU PORT FROM 2007 TO 2011

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Objective To describe the results of screening for syphilis on Chinese workers going overseas for work at Chengdu Shuangliu Port,and to describe some epidemiological aspects of cases.

Methods Retrospective review of positive syphilis screening tests in the period of 2007-2011 was analyzed.

Results From 2007 to 2011,a total of 124,304 travelers were screened. The average positive rate of syphilis was 1.22%.The positive rate was on a decreasing trend. The highest rate was in the ages group of 30-49, this accounted for 79.9% of all positive cases.However, cases among young (under 30 years old) and older people (65 and above) were increasing.Male infection rate was much higher than female ($P<0.05$).In the occupational distribution, the majority infected people were exported labourers. However, over the years there was a downward trend.

Conclusion Syphilis remains a problem amongst laborers who go overseas to work, although is declining. Health education and behavioral intervention should be enhanced in order to prevent from spreading of this disease.
Key words Syphilis;Prevalence trend;Analysis

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APTHC-0750
SURVEILLANCE OF HBV INFECTION AMONG ENTRY TRAVELERS AT SHUANGLIU INTERNATIONAL AIRPORT FROM 2007-2011

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Objective To describe the results of screening travellers for HBV infection among international travelers arriving for longterm work at Shuangliu International airport in Chengdu.

Methods HBsAg was tested among entry travelers at Shuangliu international airport from 2007 to 2011.

Results From 2007 to 2011,a total of 12,004 entry travelers were screened, all of them did not hold Chinese passport. The average positive rate of HBsAg was 3.16%. Most cases of positive HBsAg were young people,infected travelers at 30 to 50 age group accounted for 63.06%. Positive rate among males was higher than that among females ($P<0.05$). Infection rate was the highest among imported labourers.

Conclusion The results of surveillance will help our future works related to health education and behavioral intervention among entry travelers.

Key words Entry travelers; HBV; Surveillance

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APTHC-0751
HIV INFECTED CHARACTERISTICS AMONG INTERNATIONAL TRAVELERS AND ITS INFLUENCE ON LOCAL HIV EPIDEMIC SITUATION IN SHENZHEN

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Objective The port of Shenzen is one of the busiest and fastest growing ports in southern mainland China with an estimated 200 million passengers per year. It is a major entry and exit point from mainland China to Hong Kong. Our study is to describe the result of screening for HIV infection among international travelers arriving on longterm visas in Shenzhen, and to ascertain epidemiological features of positive cases.

Methods We analyzed testing results of HIV antibody and characteristics of people who are HIV-1 antibody positive among international arrivals in Shenzhen between 2008 to 2012, and compared the data with former data collected at Shenzhen including the data at port and local HIV epidemic data.

Results From 2008 to 2012, HIV antibodies had been tested on 346,354 international travelers at Shenzhen ports , and 81 of them (0.2%) were found to be HIV-1 antibody positive. This included travelers from 23 countries and areas, with 27% people from mainland China, 31% from Hong Kong and Taiwan, 15% from other countries of Asia, and 12% from Europe. The original route of infection was determined as heterosexual transmission in 39.5%, homosexual transmission in 20%, and unknown in 29.6%.

Compared with similar screening in previous years, the rate of positive tests was increased slightly, but HIV infection acquired by homosexual transmission increased notably. This tendency matched local community data of HIV

infected situation. HIV-1 D and G subtypes were detected only among international travelers, and was not detected among local citizens.

Conclusion The level of HIV infection is relatively low among international logterm visa applicants screened in Shenzhen. Our study suggests the mode of transmission is changing and new subtypes of antibody have been discovered, which indicate a new challenge to HIV control within local area in Shenzhen.

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APTHC-0752
PREVALENCE OF HEPATITIS-B SURFACE ANTIGEN AMONG INTERNATIONAL TRAVELERS AT PORT OF QINGDAO, CHINA: SURVEILLANCE DATA FROM 2009 TO 2012

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Background: Hepatitis B virus (HBV) infection is a global public health problem and a major health issue in China. The HBV infection in international travelers has potential to affect the spread of the disease because of increasing cross-border and cross-continental movements of people. However, there are few studies which have reported on the prevalence of **HBsAg** among international travelers in China. The purpose of this study was to investigate the seroepidemiology of HBV in international travelers at Qingdao port, which is one of the largest ports in China, in order to provide scientific bases for the disease surveillance and prevention.

Methods: Screening was performed on selected arriving international travellers in Qingdao port, China, from 2009 to 2012. Serological samples and demographic information were collected from 92,021 participants. HBV surface antigen (HBsAg) and alanine amino transferase (ALT) were determined.

Results: The overall HBsAg prevalence of this selected screened group of international travelers was 2.64% , the origins being: mainland China 2.53%, Asia (exclude mainland china) 3.78%, Africa 6.15%, European 0.54%, Oceania 0.34% and America 0.08%. The highest HBsAg prevalence in Asian countries of origin were in travellers from Mongolia, Taiwan and Hongkong.

We found statistically significant differences of HBsAg positive in men versus women (P<0.01). The prevalence of HBV infection increased with age. Alanine aminotransferase (ALT) levels were elevated (>40IU/L) in 24.21% for male and 9.17% for female of the HBsAg-positive. Elevated ALT levels were significantly higher in males compared with females (P<0.01). The highest proportion of patients with elevated ALT was 24.68% in middle age for those from mainland China, and 26.14% in young adulthood for those from other countries.

Conclusion: Improved understanding of HBsAg carriage in travellers may help target risk-reduction strategies and interventions to limit the spread of HBV infection related to global travel.

Fig. 1 prevalence of hepatitis B virus surface antigen stratified by region

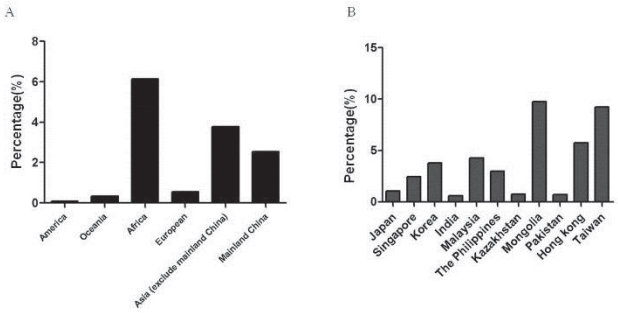
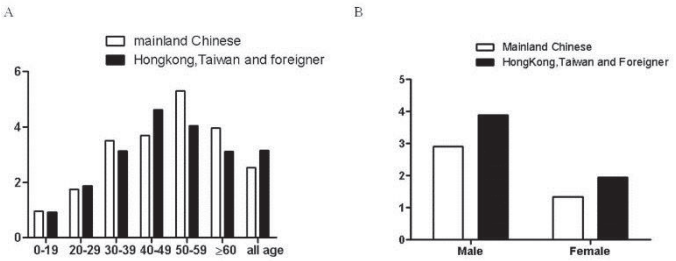


Fig. 2 Age and gender-specific prevalence of hepatitis B virus surface antigen



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APTHC-0757
PREVALENCE AND CHARACTERISTICS OF HERPES SIMPLEX VIRUS 2 (HSV-2) INFECTION AMONG IMMIGRANTS AT THE ENTRY PORT OF SHANGHAI

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Objective To determine prevalence and characteristics of HSV-2 infection among immigrants at the entry port of Shanghai. **Methods** 874 randomly selected immigrants at the entry port of Shanghai in May, 2012 who were negative for HIV, HCV and syphilis infections and all of the 167 immigrants who were positive for any of HIV, HCV and syphilis infections were tested for HSV-2 IgG antibody using the enzyme-linked immunosorbant assay (ELISA). Statistical analysis was performed accordingly. **Results** 154 (17.6%) of the 874 immigrants who were negative for HIV, HCV and syphilis infections were tested positive for HSV-2 infection. The HSV-2 prevalence was significantly higher among elders with a linear association between the HSV-2 prevalence and age (Linear trends X^2= 17.255,P<0.001). Those who were from regions such as Hongkong, Macau, Taiwan, Japan, United States and Canada had higher prevalence of HSV-2 infection. Among the 167 immigrants who were positive for any of HIV, HCV and syphilis infections, 52 (31.1%) were tested positive for HSV-2 infection; A significantly higher HSV-2 prevalence was observed among females than males (45.5% vs. 26.0%; Peason's X^2=5.711,P=0.017). **Conclusions** The prevalence of HSV-2 infection was relatively high among immigrants at the entry port of Shanghai, much higher than the general Chinese population. This implies a big challenge and pressure of HSV-2 spreading from abroad to China, underscoring the urgent needs of HSV-2 surveillance, health education, preventions and interventions targeting immigrants.

Key words: HSV-2; Prevalence; Immigrants; Sexually transmitted diseases

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APTHC-0759
THE PREVENTIVE EFFECT OF PYRIPROXYFEN AGAINST DENGUE TRANSMISSION AT RURAL VILLAGE IN LAO P.D.R.

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Introduction: Recently dengue epidemic rages in most tropical and subtropical regions. In 2013, 44,171 cases of dengue fever and dengue hemorrhagic fever including 95 deaths had been reported in Lao P.D.R. up to December 27, according to the report of World Health Organization Western Pacific Region as of January 15, 2014. The prevalence in 2013 has increased to 4.4 times last year. We implemented the study to evaluate the distribution of dengue infection at rural villages in Lao P.D.R. and the efficacy of an intervention by larvicide treatment as a vector control against dengue transmission.
Methods: In April (dry season) and September (rainy season) of 2013, we carried out the dengue prevalence survey by using rapid diagnostic test kits for random-sampled 50 subjects over two years old from two rural villages (one is a pilot area and the other is a control area) at Khammouane province in Lao P.D.R. And we applied pyriproxyfen which inhibits the growth of mosquito larvae in water jars only in pilot area before rainy season in each year.
Results: In dry season, the percentage of subjects who showed positive for dengue specific antibody (IgG or/and IgM) was 56.5% at the pilot area and 48.8% at the control area. On the other hand, in rainy season, it was 67.7% and 93.9% respectively. There were significant differences in rainy season between results of the village with an intervention and those of the village with no intervention (dry season: p=0.470539, rainy season: p=0.017044). Subject with positive results for dengue antigen was not seen throughout this survey.
Conclusion: These results might indicate that pyriproxyfen has the preventive effect against dengue transmission.

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APTHC-0761
MOLECULAR EPIDEMIOLOGICAL CHARACTERISTICS OF MYCOBACTERIUM TUBERCULOSIS (MTB) ISOLATES FROM IMMIGRANT AND EMIGRANT POPULATION AT SHANGHAI PORT

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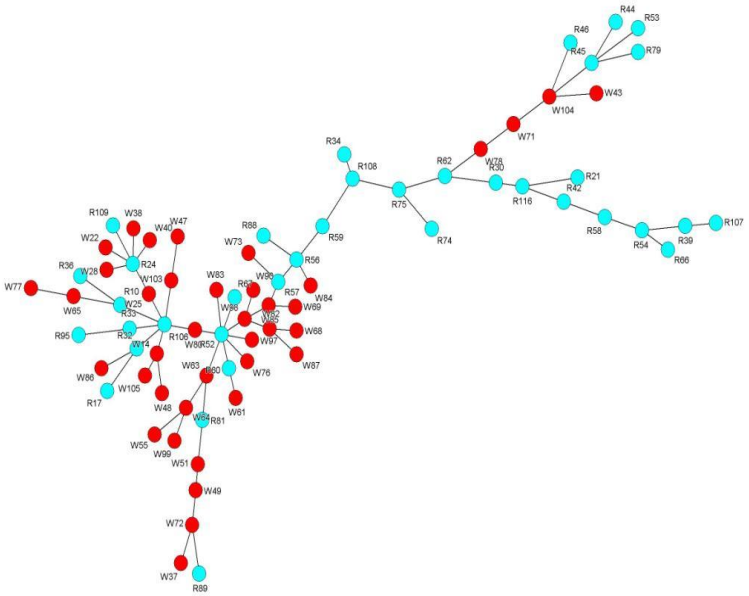
Objective To compare the characteristics of molecular epidemiology of Mycobacterium tuberculosis (MTB) isolates from immigrant and emigrant population at Shanghai port by genotyping analysis. **Method** Sixteen loci Variable-Number-Tandem-Repeats (VNTR-16) method was used for genotyping MTB stains isolated from immigrant and emigrant population at Shanghai port. **Result** 74 MTB clinical isolates were collected from TB patients from 2009 to Mar 2013 at Shanghai port, including 37 isolates from emigrant Chinese people and 37 isolates from immigrant foreigners. The genotyping analysis showed 20(54.05%) isolates from immigrant foreigners were Beijing genotype and comparatively 33(89.19%) isolates from emigrant Chinese people were identified as Beijing genotype. The rate of drug resistent TB isolates has no signifcant differences between two groups. The profiles of 16 loci VNTR from 74 isolates differed significantly between emigrant Chinese and immigrant foreigners and no cluster of isolates were observed among all population. **Conclusion** Beijing genotype is dominant in the isolates from emigrant at Shanghai port. Genotyping characteristics of MTB isolates from immigrant foreigners were significantly different from local MTB isolates, indicating TB patients from immigrants were infected before they immigrate to China.

Table: Comparision of drug resistant TB between Beijing genotypes or Non-Beijing genotypes

	Beijing genotype	Non-Beijing genotype	P value
Drug resistant TB	18	7	<0.05
Drug sensitive TB	35	23	

Graph: Cluster analysis of all 74 TB isolates



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APTHC-0762
INFECTIOUS DISEASES ON CRUISE SHIPS: A SYSTEMATIC REVIEW FROM 1973-2013

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Background. With the rapid growth of cruise travel industry, the prevention and control of infectious diseases on cruise ships is becoming a new public issue which has been highly valued . ***Methods.*** All related articles published since 1973 and the data announced by VSP (the Vessel Sanitation Program) were reviewed, and factors of cruise related infectious disease were analyzed. ***Results.*** Our analysis showed that gastrointestinal infectious diseases and respiratory infectious diseases are the two main kinds of cruise related infectious diseases, with gastrointestinal infectious disease more often occurred. Norovirus, shigella and Escherichia coli (ETEC) are the most commonly detected pathogens in gastrointestinal infectious diseases, whereas the pathogen with highest incidence for respiratory disease is influenza virus, followed by varicella and legionella. Disease occurrence rate in tropical waters is significantly higher than that in temperate and cold waters(72.72% vs 13.64%,13.64%, $p<0.05$). ***Conclusion.*** This review demonstrates that gastrointestinal infectious disease and respiratory infectious disease are main kinds of infectious diseases threatening cruise ship travelers, and geographic difference of outbreaks exists. Implementation of proper preventive measures and effective education to passengers are recommended to avoid and control the outbreaks. The identification of cruise related infectious disease may serve as a good foundation for disease rapid diagnosis and control management.

Key words: cruise, cruise related infectious disease, gastrointestinal infectious diseases, respiratory infectious diseases, tropical waters

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APTHC-0768
ASSESSMENT THE RISK OF TRANSMISSION INFECTIOUS DISEASE FROM SHORT-TERM ENTRY FOREIGN CREW IN RIZHAO PORT

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Objective To surveil the infectious disease status among short-term entry foreign crew,to provide references for relevant prevention strategy.**Method** To monitor the situation of infectious disease in short-term entry foreign crew from 2010-2013, understand their activities and assess the risk of spread infectious diseases .**Result** We detected several infectious disease in foreign crew including malaria, syphilis, AIDS and cholera etc.infections disease carrying rate reached 5.6%.There are a series of high risk activities, eating in public place and prostitution, there is no regulation on short-entry crew. Imported infectious disease transmission risk is huge. **Conclusion** To strengthen the monitoring of infectious diseases and health education is very important,it play a role key in the control of infectious disease entry spreading.

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APTHC-0769
INVETIGATION AND ANALYSIS OF A CLUSTERING OUTBREAK OF INFLUENZA A(H1N1) AMONG FOREIGN CREWS AT FRONTIER PORTS

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Objective: To investigate and analyze the diagnosis and disposal process of a clustering outbreak of influenza A(H1N1) at Shanghai Yangshan port,and to provide reference for enhancing rapid response system to public health emergencies at the frontier ports.

Methods :The epidemiological investigation,rapid test and quarantine treatment to the clustering outbreak were carried out.Based on these

finding,the strategies for rapid response to the public health emergency were discussed.Quarantine officers at Yangshan port supervised the isolation of five confirmed cases of the influenza A (H1N1),and laboratory testing was just carried out by Ningbo International Travel Healthcare Center(last port of the foreign ship). The quarantine officers also detected a new influenza A (H1N1) case.

Results: The crew suffering from the disease received medical treatment,and leaved with the ship.The effective measures were taken timely which helped to avoid the expansion of epidemic by Shanghai and Ningbo quarantine bureau.

Conclusion :According to International Health Regulation 2005, the health quarantine should extend the range of inspection,enhance the control of common and frequent diseases which can easily causing public health emergency such as influenza A.It is necegsary to establish a new rapid response system to public health emergency by adjusting the sanitation quarantine strategy ,strengthening the cooperation of relevant ports and departments, strengthening the capacity building, and providing technical support.This case provided precious experience of construction of the successful mode dealing with infectious diseases and response system of public health emergency at frontier ports.

Key words: influenza A(H1N1);outbreak ;Frontier ports;

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APTHC-0771
MOLECULAR EPIDEMIOLOGICAL ANALYSIS OF RECENT HEPATITIS A IN JAPAN AND ASIAN COUNTRIES

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Background/aims. Hepatitis A virus (HAV) is still one of the common causative agents for acute hepatitis in Japan. Most of HAV infections in Japan were sporadic cases (approximately 100 ~ 150 cases per year) with exceptional occurrence of small-scale outbreaks. However, 346 cases have been reported in 2010 and a large outbreak (49 cases) associated with a revolving sushi bar in Chiba City was also reported in 2011. To investigate the changing epidemiology of HAV in Japan and neighborhood countries, we genotyped Japanese HAV strains obtained from 2010 to 2013.

Methods. Viral RNA was extracted from serum or fecal specimens of acute hepatitis A patients and a fragment of VP1/2A region was amplified by RT-PCR. Nucleotide sequences of amplified products were aligned with those of HAV genotypes available from GenBank using ClustalW2 software. Phylogenetic trees were constructed with MEGA software by Neighbor-Joining method.

Results. Phylogenetic analysis revealed that HAV IA strains could be divided into two subgenotypes. The sequences of one of the two IA sub-lineages considered to be related with Philippines strains. However, in 2012, HAV belonged to this subgenotypes was not isolated in Japan. The other IA sub-lineage corresponded to strains endemic to Japan. Concerning a large outbreak in Chiba City in 2011, all isolates from 23 patients were clustered within this IA subgenotype, displaying 100% sequence homology with each other. The sequences of Japanese IIIA strains were similar to those of strains that caused a large epidemic in the Republic of Korea from 2007 to 2010.

Conclusions. Resurgence of HAV in 2010 can be attributed to importation of two newly emerged HAV genotypes. However HAV belongs to imported IA

subgenotype was completely disappeared in 2012, suggesting that this subgenotype failed to settle in Japan. These results suggested that molecular phylogenetic analysis was useful for the investigation of changing epidemiology of HAV.

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APTHC-0772
RISK OF INFECTIOUS TUBERCULOSIS FROM INTERNATIONAL MIGRANTS AT SHANGHAI PORT

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Background: Increasing number of international migrants and anti-drugs tuberculosis are the most important reasons for the prevalence of tuberculosis around the world. Tuberculosis screening and DOTS among migrants at the frontier port in Shanghai are helpful to diminish its spread. This paper tells us the incidences of active tuberculosis and culture positive tuberculosis and anti-drug tuberculosis at Shanghai Port through data from 2009 to 2011, which is necessary to understand the risk of this infectious disease from migrants that Shanghai faces.

Objective: To evaluate the risk of active tuberculosis and culture positive tuberculosis among international migrants at Shanghai Port, which helps for Chinese tuberculosis surveillance and DOTS system.

Methods: From 2009 to 2011, for migrant applicants at Shanghai Port, where there was a suspicion of infectious tuberculosis as seen by abnormalities in the Chest radiology, smear and culture examination from 3 consecutive early morning sputum specimens for tuberculosis were performed. Isolated MTB complex strains were subject for DST on MGIT 960 method. Incidence rate of active tuberculosis and culture positive rate and MDR rate were calculated.

Results: There were 116,756 applicants who will live in Shanghai beyond one year and 9851 U.S immigration applicants. Among 116,756 applicants, 146 active tuberculosis patients and 31 culture positive patients were diagnosed. According to our statistics, the incident rate of active tuberculosis was 125 per

million and the culture positive rate was 27 per million. Among 9851 U.S immigration applicants, 612 had abnormalities in the Chest radiology, 11 of them were MTB complex culture positive , the culture positive rate was 112 per million. Our statistics shows MDR rate of migrants was 4.3% and MDR rate of foreign applicants was 2.8%.

Conclusions: At Shanghai Port, incidence rate of active tuberculosis of international migrants reached the level to high burden country, the fluctuation in the culture positive rate was smooth. MDR rate was lower than the average level in the world. It was necessary for Shanghai to enhance the surveillance system to manage infectious tuberculosis and treat these patients effectively.

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APTHC-0774
HIV/AIDS EPIDEMIOLOGIC FEATURE OF EXPATRIATE IN SHANGHAI AND THE STRATEGIES TO IMPROVE THEIR HEALTH AND PREVENT FROM THE SPREAD OF DISEASE

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Objective: To understand the epidemiological characteristics of HIV/AIDS infections in international travelers, and explore effective health management measures. **Methods:** We did a retrospective review of HIV/AIDS infections in the 2003 to 2012 international travelers at Shanghai port, and compared it with the HIV/AIDS epidemic situation throughout China. Epidemiological characteristics of HIV/AIDS infections in international travelers were analyzed. **Result:** From 2003 to 2010, 184 cases of HIV / AIDS infection were detected at the port of Shanghai with a ratio of male to female of 7:1, and the total detection rate for HIV-positive is 30.76/100,000. On the other hand, total detection rate of HIV-positive is 42.19/100,000 with an increasing trend in international expatriates, which are refer to personnel employment, education or residence (residence in China more than half a year), HIV-positive detection rate is 12.57/100,000 in outbound travelers. Generally, HIV infected people in Shanghai entry-exit people, are mainly at the age 30~49 years old. the major transmission route (77.18%)is sexual contact, the transmission rate in heterosexual partners is 43.48% , homosexual transmission rate is 33.70% and man-to-man route showed an increasing trend.41.85% of them do a

technical work and have college degree (71.2%). HIV-positive detection rate of International student (54.65/100,000) is higher than the rate of international employee (45.01/100,000). **Conclusions:** A higher HIV-positive rate was found in expatriate. The imported HIV infection with a trend of more case-quantity, higher staff mobility,higher probability with high-risk behavior contribute to more risk of spreading. The strategies should be taken, including promoting awareness of HIV/AIDS, improving the HIV follow-up among international travelers and providing diagnosis and treatment information. At the same time, the study of knowledge, attitude and practices of HIV/AIDS among college students should be taken, promoting awareness of HIV/AIDS among students.

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APTHC-0775
IMPACT OF CLIMATE FACTORS ON EPIDEMIOLOGICAL STUDIES OF MOSQUITO BORNE VIRAL DISEASES

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Mosquito borne diseases such as dengue fever, St. Louis encephalitis and Japanese encephalitis are serious threats to human health. Climate changes, such as changes of temperature and precipitation, may alter the geological distribution, development and growth of mosquitoes as well as the viral proliferation inside them, which in turn affect the disease prevalence and transmission. This study introduces the latest research on the impact of climate changes on mosquito?borne viral diseases and reviews the epidemiological characteristics of these diseases to shed light on the epidemiological patterns under climate changes.

Key words: Climate change; Dengue fever; St. Louis encephalitis; Japanese encephalitis; Epidemiology

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APTHC-0776
DISEASES SURVEILLANCE RESULTS AMONG LIAONING EXIT-EXPO POPULATION FROM 2004 TO 2013

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To find out the common infectious diseases and the epidemiology characteristics of those which need priority surveillance among Liaoning exit-expo population by means of the analysis of the infectious diseases surveillance situation among Liaoning exit-expo population, through which to guide the infectious diseases surveillance work at Liaoning ports. **Method** Make a analysis of the data of types, detection rate, the age/ national/ occupation distribution of 1746 infectious diseases detected among Liaoning exit-expo population from January 2004 to December 2013. **Result** Four main kinds of infectious diseases that was virus hepatitis, syphilis, open tuberculosis and HIV/AIDS were detected among 1746 people, and the detection rate was 166.84,113.94, 32.23,11.00 per 100000 separately. The detection rate of Dengue fever and malaria was comparatively lower. Population aged 31 to 50 occupied 60.25% which was the highest of all detected infectious diseases. The detection rate of syphilis, HIV infection and AIDS, viral hepatitis cases is the highest in ship pilot, and that of open pulmonary tuberculosis is the highest in international marriage population. **Conclusion** Virus hepatitis, syphilis, open tuberculosis and HIV/AIDS would be kept as the priority surveillance infectious disease types among Lioning exit-expo population, and the priority surveillance age would be the population aged 31 to 50, the priority surveillance nationality would be Chinese, South Korean, North Korean, the priority surveillance occupation would be ship pilot.

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APTHC-0777
A DESCRIPTION OF SURVEILLANCE FOR INFECTIOUS DISEASE AMONG ENTRY-EXIT PERSONNEL AT YANTAI PORT FROM 2006 TO 2010

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Objective To describe the result of selected infectious disease surveillance required for visa entry on international travellers and exit Chinese including civil servants, business personnel, overseas students and travelers who go abroad to visit relatives in Yantai port from 2006 to 2010.

Method Analyze the data of infectious disease among entry-exit personnel at Yantai port from 2006 to 2010.

Result The total number of entry-exit personnel at Yantai port from 2006 to 2010 surveyed was 66,049. 414 cases of infectious disease were found, 0.06%. Specifically 9 cases of HIV infection, 101 cases of syphilis, 32 cases of pulmonary tuberculosis and 272 cases of viral hepatitis-B, were identified.

Conclusion Extremely low rates of selected infectious disease were identified in the screened population.

Key word: Infectious disease; Surveillance; Entry-exit personnel

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APTHC-0786
FACTORS INFLUENCING SEXUAL BEHAVIOUR BETWEEN TOURISTS AND TOURISM EMPLOYEES: A SYSTEMATIC REVIEW

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Background: Increasing foreign travel has a significant impact on the incidence and prevalence of Sexually Transmitted Infections(STIs) and HIV. Tourists are more likely to engage in sexual activity and acquire STIs while travelling then in their own country. Previously published reviews have focused on the knowledge, attitudes and behaviour of tourists and acquisition of STIs. Less is known about the impact on tourism workers in countries visited by tourists.

Aim: The aim of this review is to ascertain what factors influence sexual behaviour between tourism operators and tourists by exploring the prevalence of sexual behaviours between the two populations, their perceptions of sexual risk when engaging in sexual activities and the knowledge of tourism operators regarding STIs.

Methods: A systematic literature review was adopted as the study design. Database searches were conducted in Medline/Ovid, EMBASE, Cochrane library and CINAHL for studies published between 2000 and December 2013.

Results: A total of 1546 studies work identified and 17 articles met the inclusion criteria. Papers included quantitative, qualitative and mixed methods studies. Studies were conducted in 9 countries, on with high prevalence of tourism. Findings suggest that there is a need for preventive medicine and pre-travel advice for travellers, especially those who are traveling to developing countries. Overall, condom use and STI screening were seen to be low in studies focusing on tourists as well as tourism operators.

Conclusion: Evidence of the knowledge/attitudes and prevalence of sexual risk behaviour in tourism employees is limited. STI screening, pre-travel advice, travel history in terms of contracting STIs and safe sex awareness are found to be necessary. There is a need for a modification in sexual health education in developing as well as developed countries. Moreover, tourism policies need to be amended keeping in mind all stakeholders to ensure safer sexual encounters during travel.

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APTHC-0821
QUANTITATIVE ANALYSIS OF HBV INFECTIONS USING REAL-TIME QPCR ASSAY AMONG THE INTERNATIONAL ENTRY-BEIJING TRAVELLERS

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Objective: Real-time qPCR assay with nucleic acid extraction method based on silica-coated magnetic particles was used to investigate and analyze the HBV infections of international entry-Beijing travellers in order to improve the travelling health care.

Methods: HBsAg-positive serum samples were collected from 84 international travellers (42 from Asia, 13 from Europe, 12 from America, 11 from Africa and 6 from Oceania) in 2011 to 2012. The mean age was 41, 53 for male and 31 for female. Of these HBsAg-positive samples, 35 were HBeAb and HBcAb-positive, and 10 were HBeAg and HBcAb-positive. Nucleic acid was extracted using silica-coated magnetic particles and tested by real-time qPCR.

Results: The standard curve was plotted with a range from 23 to 2.3×10^8 copies per reaction. HBV DNA positive rate was 64.29% (54/84) among the 84 HBsAg-positive serum samples with the median of 9×10^2 copies/μl, 21 cases were HBV DNA positive in the HBeAb and HBcAb-positive samples with the median of 1.6×10^2 copies/μl, and HBV DNA positive rate was 100% (10/10) in the HBeAg and HBcAb-positive samples with the median of 6.1×10^5 copies/μl.

Furthermore, 13 cases were HBV DNA-positive with more than 5×10^4 copies/μl, 7 cases with more than 5×10^5 copies/μl.

Conclusion: A few HBV infectors were found by serological assays among the international travellers. The quantitative analysis indicated that some infectors had a high viral load level with dysfunction of liver. Therefore, the international travelers with HBV infection should refer to hospital and receive the antiviral therapy as soon as possible.

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APTHC-0678
DIAGNOSIS OF SIX IMPORTED PERNICIOUS MALARIA CASES IN SHENZHEN PORT-OF-ENTRY

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Aims The study was aimed to analyze imported malaria in Shenzhen Port-of-Entry and to provide references for imported malaria prevention and control. **Methods** Onsite temperature monitoring, epidemiological investigation and laboratory tests were used to diagnose suspected malaria patients in Shenzhen Port-of-Entry. **Results** Six suspected pernicious malaria cases were identified in a group of dispatched workers returning from endemic areas. **Conclusion** Shenzhen Port-of-Entry is facing imported malaria threat. All relevant departments should enhance cooperation and coordination, increase malaria awareness and take effective measures to prevent imported malaria.

Key words: Imported malaria; Epidemiological investigation; Entry-Exit Port diseases surveillance

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APTHC-0681
Primaquine dosing errors – the human cost of a pharmaceutical anachronism

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Background: Primaquine remains in use as an antimalarial treatment as well as a prophylactic antimalarial, especially in areas in which P.vivax is endemic. Primaquine is one of many medications whose dosage may be expressed on labeling as either compounded salt or base. Primaquine's prophylactic efficacy is dependent on its dosage, currently recommended as 30mg of base. Commercially available tablets each contain 15mg of base, equivalent to 26.3 mg of salt. Because the amount of salt in a single tablet (26.3mg) is so similar to the total recommended prophylactic dose of base (30mg) errors may be made, resulting in administration of half of the recommended prophylactic dose and subsequent prophylaxis failure. This study aims to illuminate the role of salt/base confusion in Primaquine prophylaxis failure. Methods: A retrospective review of reported malaria cases recorded with the Israeli Ministry of Health during the years 1995-2011. All cases of malaria in which Primaquine was the prophylactic agent were included in this study. Cases in which the dosage was consistent with current guidelines of 30mg of base were considered true Primaquine failure. Cases of prophylaxis failure due to primaquine dosing errors were considered when the dose used was lower than 30mg of base. **Results:** During 1995-2011 there were 14 malaria cases in Israeli travelers who used Primaquine prophylaxis. In 6/14 (42.8%) patients, malaria developed after Primaquine dosing errors had occurred, 2 of these cases had P. falciparum and the other 4 developed P. vivax malaria. These patients had been issued or took a single daily tablet (half the recommended dose - each tablet contains 26.3 mg of primaquine, equivalent to 15 mg of primaquine base) under the assumption that this approximated the recommended 30mg dose. **Conclusion:** Confusion surrounding salt/base dose of primaquine contributes to ~50 % of primaquine prophylaxis failure. The dual nature of the labeling of this medication lends itself to misapprehension by physician, pharmacist, or patient. Adopting a single moiety, the base form, as the basis for all labeling and dosage guidelines would go even further towards eliminating dosage confusion for antimalarial agents, and especially for primaquine.

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APTHC-0732
MALARIA PREVENTION KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) AMONG CHINESE PEOPLE GOING TO AFRICA AND CHINESE PEACEKEEPERS GOING TO LIBERIA

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Objective: To survey the knowledge, attitude and practice(KAP) concerning malaria and its prevention in Chinese people going to Africa and Chinese peacekeepers going to Liberia.

Method: We used a questionnaire survey, to assess KAP among Chinese peacekeepers going to Liberia and Chinese people going to Africa. The survey collected demographic information as well as occupation, work history, and malaria prevention education.

Results: Of approximately 18000 Chinese people going to Africa one year who get yellow fever vaccines at Beijing International Travel Healthcare Center, we non-randomly selected 458 Chinese people going to Africa and 453 Chinese peacekeepers going to Liberia completed the survey between June and July in 2013 (5%). Respondents correctly identified insect repellent containing DEET (59.5% Chinese people, 96% Chinese peacekeepers) and anti-malarial medication (59.5% Chinese people, 85.7 Chinese peacekeepers) and long-lasting insecticidal nets (62.4% Chinese people, 90.7 Chinese peacekeepers) as effective preventive measures. Many respondents were unaware of how to get anti-malarial personal protective equipment (61% Chinese people, 26% Chinese peacekeepers) and were concerned about their side effects especially the pesticide poisoning.

Conclusion: Overall, Chinese Peacekeepers going to Liberia demonstrated better knowledge, attitude and practice of malaria prevention than Chinese people going to Africa, but both of them performed risky activities while practicing only some recommended malaria preventive measures. Malaria prevention education should focus on advance notification if traveling to a malaria-endemic area, how to easily obtain anti-malarial personal protective equipment, and the importance of practicing all recommended preventive measures.

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APTHC-0763
ANALYSIS AND STUDY ON THE METHOD TO PREVENT AND CONTROL THE MALARIA AND DENGUE FEVER IN THE PERSONS BACK TO CHINA IN PORTS OF SHANDONG

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Objective Study the risk of the Malaria and Dengue Fever,and get the method to prevent and control these diseases among the persons back to China. **Method** We collected 37 cases of patients with Malaria or Dengue Fever among the persons back to China in Shandong port during 2004 to 2013, and collected the epidemiological data. Then we perform the statistics analysis of the Malaria and Dengue Fever, find out the risk factors of the Malaria and Dengue Fever, then investigate the method on the international travel healthcare, disease prevention and control after back , patient disposal. **Result** There are a lot of workers and sailors back to China every year. In recent years, the amount of the patient of Malaria or Dengue Fever is increasing. The reason is the weakness on the prevention and control to the Malaria and Dengue Fever when they work or live outside. There are no enough drumbeating about Malaria and Dengue Fever. On the other side,they have no enough awareness about the health conformation after back . They come to hospital or International Travel Healthcare Center to inspect and treat only after they have had clinical symptoms. **Conclusion** For the persons back to China,we should intensify the propaganda before they exit,make them grasp the protection knowledge. To find out the affected people and take the method to control, we should perform the rapid-inspection in Port, or force them to inspect in the International Travel Healthcare Center .

Keyword Ports of Shandong , Persons back to China , Dengue Fever ,Analysis,Study on the Method to Prevent and Control

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APTHC-0765
MALARIA INFECTION AMONG A GROUP OF CHINESE UN PEACE KEEPERS RETURNED FROM AFRICA

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Objective: To identify malaria infection in a group of Chinese UN peace keepers back from Africa in order to treat early, and prevent transmission.

Methods: The subjects were 13 Chinese UN peace keepers back from an African area with epidemic malaria on November 29, 2013. The blood samples were selected for detection of malaria with microscopic examinations, rapid tests and real-time fluorescence polymerase chain reactions (PCR). The positives were confirmed with plasmodium falciparum (P. falciparum) specific real-time PCR. The P. falciparum load was quantitated with fitted standard curve. Epidemiological investigations of the positives were conducted. The history of chemoprophylaxis was included in the investigation.

Results: Among 13 Chinese UN peace keepers, all of them were P. falciparum parasites negative with microscopic examinations and rapid tests, but one was positive with real-time fluorescence PCR. The positive sample was confirmed as P. falciparum with specific real-time PCR. The detection rate of P. falciparum was 7.7% (1/13). P. falciparum load was 8copies/mL.

Epidemiological investigation revealed that the patient had clinical malaria on November 20, 2013 and was given antimalarial treatment locally. He was hospitalized on November 21, given 3 days antimalarial treatment and symptomatic treatment in hospital, and recovered. He got malaria twice in December 2012 and January 2013 while in Africa, and cured after antimalarial treatment each time. The patient had never used drugs for prophylaxis.

Conclusions: Among the Chinese UN peace keepers, a P. falciparum infector was detected. P. falciparum load in his blood was very low after a recent treatment, the P. falciparum parasites were not found by microscopic examinations and rapid tests, but could be detected by a sensitive real-time

fluorescence PCR. It is suggested that the Chinese UN peace keepers who have high risk of exposure to mosquitoes in malarious areas should use antimalarial drugs for chemoprophylaxis.

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APTHC-0819
THE CHALLENGES OF ANTIMALARIAL DRUGS

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Malaria is one of serious diseases to damage human healthy. According to the World Health Organization (WHO) statistics, about 300 to 500 millions people were infected and resulted in one to two millions death. Although tremendous efforts have been devoted to find antimalarial agents, there are still great challenges such as drug resistance and productivity. How to resolve these problems is an important subject of antimalarial drugs. First, increasing the yield of artemisinin by the research of artemisinin synthesis methods; Furthermore, improvement of artemisinin to reduce recurrence rate and drug resistance; In addition, expanding scope of the study of antimalarial agents, such as allicin, agrimophol, to discover novel antimalarial drugs.

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APTHC-0770
DEATHS OF AUSTRALIAN RESIDENTS OVERSEAS 1 JULY 2011 TO 30 JUNE 2013

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Background: In the 2012/13 year, the Australian Bureau of Statistics (ABS) reported a record 8.37 million short term departures from Australia. Travel overseas has risks and the Australian Department of Foreign Affairs and Trade (DFAT) deals with deaths of Australians reported overseas. The aim of this

study was to describe these deaths of Australian's travelling overseas, which may inform our preventive strategies.

Methods: Data was obtained from DFAT on people who had died overseas during the period 1 July 2011 to 30 June 2013. Information provided included country where the death occurred, type of death (injury, illness, natural, suicide, murder, other and unknown), and financial year of death. Country of death was grouped into the following ABS categories: Europe, Americas, Africa, Oceania and Asia. Crude death rates per 100,000 travellers were calculated using the ABS Overseas short-term resident departure data.

Results: 1,957 Australians died while travelling overseas in the two year period. Over half (1,070, 54.7%) were in Asia, which was also the most common destination (7.5 million departures). Five countries accounted for nearly three quarters (72.3%) of all deaths of Australians overseas and included Thailand, Vietnam, Philippines, Greece and Indonesia. The crude death rate per 100,000 travellers was 11.99, which ranged from 2.28 in Oceania in 2012/13 to 22.32 in Africa in 2012/13. The most common cause of death was illness (26.6%) followed by natural causes (22.4%) with nearly a quarter (23.4%) of causes of death being unknown.

Conclusions: Deaths of Australians overseas is significant, with the greatest risk for those visiting Africa. Seeking travel health advice before leaving Australia is recommended, particularly for those with preexisting medical conditions, to ensure appropriate understanding of how to respond to illnesses that they may encounter on their travels.

Acknowledgement: Kerry McMiken and the staff of DFAT for providing the summary data.

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APTHC-0714
LEPROSY: DIAGNOSIS AND MANAGEMENT IN A DEVELOPED SETTING

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Introduction: Leprosy is recognised as a global public health problem affecting many resource-poor countries but little has been published regarding management in developed settings. We reviewed all cases of leprosy seen at our tertiary institute over the last 15 years and compared our findings to global trends.

Methods: A retrospective analysis of hospital records and Victoria's iPatient management system between 1999 and 2013 was undertaken.

Results: Thirty patients with suspected leprosy were identified of whom sixteen had confirmed diagnoses and were treated at our institution. There were three cases of tuberculoid leprosy (TT), nine cases of borderline tuberculoid (BT), one case of borderline (BB), two cases of borderline lepromatous (BL) and one case of lepromatous leprosy (LL). Fifteen patients were treated for twelve months or longer and all patients except those with tuberculoid leprosy (TT) were treated with three drugs. Seven patients had documented type 1 or type 2 leprosy reactions requiring treatment. Six patients received treatment for an alternative diagnosis prior to leprosy being suspected, delaying diagnosis by months or even years in some cases.

Conclusion: This review supports the observation that leprosy diagnoses are often delayed in non-endemic settings. Leprosy should be considered in the differential diagnosis of patients with skin and/or nerve findings presenting from endemic areas to ensure prompt treatment and reduce long-term morbidity. It also highlights the need for physicians in this setting to recognise and manage leprosy reactions, which are seen in up to 50% of patients.

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APTHC-0726
MEASLES IN AN EXPATRIATE IN INDONESIA - A SALIENT TALE

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Measles is highly infectious, remains endemic in Asia and continues to cause outbreaks, despite the availability of an effective vaccine. Many outbreaks in countries which have eliminated measles trace back to returning travelers who were inadequately vaccinated. We report a case of an Australian woman who developed a febrile illness, later diagnosed as measles, 4 weeks after moving to Jakarta, Indonesia.

Case Report: A 37 year old lady presented with severe URTI symptoms. Despite treatment with antibiotics, she developed high fevers, myalgias, sore throat, rash, elevated liver enzymes and lymphopaenia. She had been to a Travel clinic prior to her move and reported being fully vaccinated. Measles vaccine was not given owing to patient verbal history of adequate vaccination. She was admitted with suspected measles and recovered. Measles IgM was positive.

Discussion: This case highlights the need to be aware of the risk of measles in travellers to regions of the world where measles remains endemic. Unfortunately, surveillance systems in these countries may not be reliable in detecting ongoing endemic cases of measles, thus hindering adequate assessment of risk for the travel doctor. In 2011, the US Centers for Disease Control and Prevention (CDC) issued a Health Advisory reporting a high number of measles cases in the US, most of which were related to international travel. The majority of cases were in unvaccinated or inadequately vaccinated travellers. 8% had received 2 doses of measles vaccine. In November 2013, Australian health authorities reported a Measles outbreak traced back to Bali, Indonesia. Our case highlights the need for pre-travel clinics to consider the risk of measles in travellers to countries with outbreaks or endemic cases of measles and to vaccinate or check serology in those travellers who do not have adequate documentation of having received 2 doses of measles vaccine.

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APTHC-0754
APPLICATION OF T-SPOT.TB AND PPD TESTS FOR TB SCREENING AMONG CHINESE UNDERAGE IMMIGRANTS TO THE U.S.A

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Objective Screening for tuberculosis infection (TB) is a requirement for applicants for various visa for the US and other countries. In general, to avoid using x-ray screening in children, blood testing or skin testing are used. In accordance with the CDC Technical Instruction for Tuberculosis Screening and Treatment (TBTI), two tests can be used for TB screening among underage visa applicants, including the blood assay T-SPOT and the tuberculin skin test (TST) using PPD. Applicants who have positive results have to undergo Chest X-ray examination (CXR). We compared the use of T-SPOT assay with TST among underage visa applicants during US pre-visa medical examination.

Methods The applicants between 2 and 14 years of age were assigned to either TST (n= 5388) or T-SPOT assay (n= 3486). The applicants, who had positive testing results, undertook a CXR. Two parts of the results were analyzed with chi-square criterion.

Results T-SPOT group had 61/3486 (1.75%) positive testing cases, including 11/61 (17.7%) cases with changes suggestive of TB on CXR PPD group had 530/5388 (9.84%) positive testing cases, including 6/530 (1.1%) cases with CXR suggesting TB. In comparison with the two testing groups, statistical analysis showed that detective rate of suspected TB was higher in T-SPOT group ($\chi 2=75.834$, $P<0.01$) although testing positive rate was lower in T-SPOT group ($\chi 2=222.666$, $P<0.01$) Are these valid statistics? YES!

Conclusion T-SPOT TB test may be better than PPD test in tuberculosis screening for underage applicants during the US pre-visa medical examination. It may help to avoid unnecessary X-ray exposure of children during TB screening.

Key words Tuberculosis Screening; Underage applicant; T-SPOT; PPD

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APTHC-0791
A HEALTH PROMOTION FOR A JAPANESE EXPATRIATE COMMUNITY IN HO CHI MINH CITY

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Primary health care was defined by Alma Ata Declaration (WHO, 1978) which includes both primary medical care and activities tackling determinants of ill health (Gillm, 2008). Salutogenesis, the new concept of health, by Antonovsky (1979), contributed the basis of the Ottawa Charter(1986) and the new public health (Lindstrom, 2005). The new public health (Nurse, 2007) consists of health promotion with a focus on enabling optimal health attainment for individuals and communities and has three core components: health education, prevention, and protection. Also the new public health has the ecological-cyclic, mutual, biological and sustainable functions: skills among daily practices, functions and methods.

In order to require multi-dimensional, but complementary approaches, the Ottawa Charter classified five key areas: 'Build Healthy Public Policy', 'Create Supportive Environments', 'Strengthen Community Actions', 'Develop Personal Skills', 'Reorient Health Services', and 'Moving into the Future' (WHO, 1986). I renewed a health promotion plan as a sustainable and ecological action for health, in my clinical settings for the Japanese clients and communities at an international clinic. For the planning, I used the community health actions made on the basis of the new concepts of health, public health and primary care.

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APTHC-0682
Mitochondrial COI gene reveals high genetic diversity in black fly Simulium tani from different elevations of Cameron Highlands, Malaysia

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The genetic diversity and population structure of Malaysian Simulium tani Takaoka & Davies has not yet been characterized. Indeed, there has been a seriously lack of genetic data to infer its phylogeographical relationships at both local and global scales. The present study aims to explore the genetic diversity of S. tani inferred from cytochrome c oxidase subunit I (COI) gene sequences from five different elevations of Cameron Highlands. A statistical parsimony network of 71 taxa aligned as 831 characters of the COI gene revealed 71 haplotypes. High level of genetic diversity but no population structure was observed among S. tani from five different elevations.

Keywords: Simulium tani, COI, genetic diversity, Malaysia

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APTHC-0712
PROTECTION FROM CLIMATE OZONE HOLE DURING TROPICS TRAVEL

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Climate elements play a direct role in human health and well-being. Temperature and humidity are particularly potent for human health in the humid and hot tropics and contribute adversely to the aging of human skin and general decline in human health. In addition, it has been shown recently that in the tropics and subtropics, prevailing high temperatures and humidity contribute additively to UV induced health effects in a climate ozone hole scenario equivalent to a whopping 50% ozone depletion (Ilyas, Handbook of Photomedicine, 2013).

Excessive sun exposure is of great concern because of its adverse effects. Exposure to UVB is harmful to the humans in several ways including sunburn, advance aging of the skin, and skin cancer as well as effects to the eye, viral infections, and immune deficiency system. The adverse human health effects, including tropical diseases, is of particular significance in the tropics. Firstly, erythemal solar ultraviolet (UVB) radiation dosages which cause skin cancer (UV carcinogenesis) are much higher at tropical latitudes than elsewhere. In addition, tropical climate with high temperature and humidity further increases UVB radiation damaging effects (Ilyas, 2007).

Therefore, it is important to educate travelers of all shades and skin colour – darkish to brown and surely whitish – that in the tropical region, one needs to take measures for sun exposure protection during intense day time radiation periods more seriously then thought before. Otherwise they would be open to a great deal of cumulative damage. In this the role of shade can not be over emphasized for outdoor travel around middle of the day. We illustrate the UV-Climate damaging effects for different regions.

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APTHC-0730
RADIOLOGICAL FINDINGS AMONG FEBRILE PATIENTS IN EQUATORIAL GUINEA - DO WE NEED A CHEST X-RAY?

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Introduction—Diagnosis of infections in Sub-Saharan Africa is often symptom based. Current guidelines suggest that tachypnea and either cough or dyspnea are sufficient to diagnose pneumonia in children. This approach may lead to overuse or inappropriate use of antibiotics.

The aim of this study is to quantify the contribution of chest radiography for the development of a more rational approach to the treatment of infections in Africa.

Methods —During 2011 we prospectively recorded demographic and clinical data of febrile patients admitted to La-Paz Hospital in Malabo, Equatorial Guinea. Chest X-rays were reviewedby a radiologist who was blinded to the diagnosis. We then assessed whether the performance of chest radiography would have changed the way antibiotics were used.

Results —120 consecutive febrile African patients underwent chest radiography. Eighteen patients, 14 of whom were children, had radiologically proven pneumonia. Only one of these patients fulfilled the clinical criteria mentioned above. Three children met the clinical criteria for, but did not have pneumonia.

Sixteen African adults and 8 children were diagnosed with malaria. Two adults (12.5%) and two children (25%) had an infiltrate. Out of 35 expatriates (27 adults and 8 children), 13 adults had malaria, and two had pneumonia. None

of the malarial patients and none of the expatriates with infiltrates met the clinical criteria for the diagnosis of pneumonia.

Conclusions - In our cohort a substantial proportion of patients had either malaria or pneumonia. Most patients with pneumonia, with or without malaria, would not have received antibacterial therapy if they had been treated according to clinical guidelines alone. Three additional patients would have been treated unnecessarily for pneumonia had chest radiography not been performed. Availability of chest radiography in sub-Saharan Africa is likely to increase the proportion of patients with pneumonia treated, and to decrease the overuse of antibiotics.

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APTHC-0746
DISCUSSION ON PATTERN OF INFECTIOUS DISEASES SURVEILLANCE AND DETECTION ON ENTRY-EXIT PERSONNEL

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Objective: To discussion on pattern of infectious diseases surveillance and detection on entry-exit personnel. **Method:** To analyze transmission of infectious diseases and pattern of international travel healthcare center (ITHC) and propose the corresponding advice by the way of reviewing the international epidemic situation, composition changes of exit-entry personnel and work pattern of ITHC. **Results**: New international epidemic situation and construction characteristic of exit-entry personnel made more trouble in infectious diseases surveillance and detection. The current work pattern of ITHC is difficult to monitor infectious diseases completely. Monitor and detection should be strengthen by improving monitor rate of returning people and foreign resident, increasing infectious diseases sample rate of entry personnel and optimize infectious disease prevent and treatment procedure. **Conclusion:** Based on updated compositional characteristic of exit-entry personnel, monitor and detection pattern of infectious diseases for exit-entry personnel should be modulate in order to improving ability of prevent and control infectious disease effectively.

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APTHC-0803
DUODENAL HEMATOMA: AN UNUSUAL PRESENTATION OF DENGUE FEVER

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Background: Dengue fever has been endemic in Malaysia and for year 2013, serology confirmed cases have been increased tremendously. Atypical presentations of dengue fever might delay the diagnosis and lead to increase mortality and morbidity. Duodenal hematoma is rare and usually related to blunt abdominal trauma, not to mention as a presentation of dengue fever. To our knowledge, this is the first case dengue fever complicated with duodenal hematoma reported in Malaysia.

Case Description: A 31-year-old Nepalese gentleman presented with fever for 6 days duration associated with abdominal pain, multiple episodes of coffee ground vomiting and passing fresh per rectal bleeding. His vital parameters were normal. Per rectal examination revealed fresh malena. An abdominal mass was palpated at right upper quadrant. His initial hematological blood test showed normal hemoglobin level (11.8 g/dl) with hematocrit level of 34.7, thrombocytopenia (62800 platelet/mm3) and leucopenia. His renal profile and coagulation profile were normal. His liver function test was deranged. Dengue serology IgM and IgG were both positive. Computed tomography of the abdomen revealed a heterogenous, lobulated, well-defined, sized 6.0 cm X 6.0 cm X 8.7 cm, hyperdense lesion at the first part of the duodenum extending to second part of the duodenum. (Figure 1) It had density of Hounsfield units 60-70 (hematoma density). Oesophagogastroduodenoscopy was performed and revealed multiple bleeding peptic ulcers. Adrenaline injection and argon plasma coagulation were carried out to secure hemostasis. He was transfused accordingly to achieve targeted hemoglobin level and coagulation derangement was corrected with fresh frozen plasma and platelet transfusion. He was discharged well on Day 21 of admission.

Conclusions: Duodenal hematoma, although rare, is a potentially fatal condition. A high index of clinical suspicion is necessary when clinicians encounter a dengue fever patient presenting with abdominal mass.

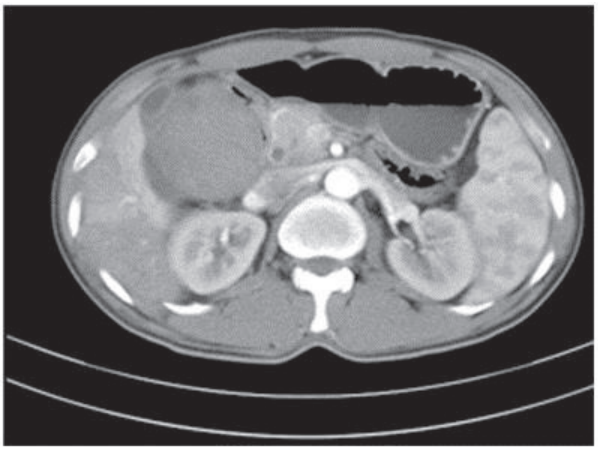

Figure 1: CT abdomen showing intramural duodenal hematoma

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APTHC-0674
SUMMARY REPORT AFTER 44 TROPICAL MEDICINE EXCURSIONS FOR HEALTHCARE PROFESSIONALS TO KENYA, UGANDA, TANZANIA AND GHANA (1995-2014)

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Introduction: Due to growing tourism to the tropics more travellers return with infectious diseases. Global warming contributes to the spread of malaria and Dengue fever in temperate climate zones. These trends underline that doctors in the developed world require more hands on experience in clinical Tropical Medicine.

Design: During the 2-week-long round-trips participants visited various hospitals and research institutes in Africa. Through a combination of ward rounds with bedside teaching (**Photo 1**), laboratory sessions, field excursions

and lectures, the most important tropical diseases were covered in the endemic areas. The excursions were accredited with 60 CME hours from the Medical Association, Düsseldorf, Germany.

Results: Of 44 excursions 19 took place in Uganda, 18 in Kenya, 6 in Tanzania and 1 in Ghana. A total of 434 healthcare professionals have been trained with an average of 10 participants per excursion. Among them were 229 women and 205 men. The average age was 49 years. Of the participants, 244 came from Europe, 97 from USA/Canada, 45 from Australia/NZ, 35 from Asia and 13 from Africa. Their specialized fields were as follows: 143 GP's, 82 physicians, 59 ID specialists, 37 gastroenterologists, 28 public health experts, 21 occupational health experts, 18 microbiologists and others.

Discussion: Most of the participants have come from Europe and the USA/Canada, which correlates with the large number of tourists from those regions who have travelled to the tropics over the last two decades. However, in recent years more doctors from the Asia/Pacific region have opted to be trained as well, reflecting the increasing trend of the burgeoning tourist industry in those regions to tropical destinations. The main target group was the middle aged GP working in medical practice. They had limited experience in clinical Tropical Medicine but were increasingly faced with post-travel examination of patients returning from the tropics.

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APTHC-0702
HEALTH CARE FOR EUROPEAN TOURISTS IN JAPAN

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Aim: To examine the issue related to the provision of health care to European tourists to Japan.

Background: The number of European tourists to Japan has considerably increased since 2012 due to a Japanese government campaign. Their issues related to health care in Japan have not been studied even though one out of the ten tourists has visited health facilities in Japan.

Design: A pilot cross-sectional study, text mining analysis.

Methods: Date were gathered from European tourists at a bed and breakfast hotel in Hiroshima from July to September 2013. The questionnaire had three parts: a 10-question demographic section, a 15-item questionnaire, and an open-ended question to express their opinions. We analyzed the numeral data by JMP 9.0 and open-ended question by Text Mining 4.2.

Results: 36 European tourists from eleven countries participated in this pilot study. Their average visit was 27 days and 67% visited for the first time. All of them had medical insurance and knew English. Two of them could use Japanese at medical facilities in Japan. Nine of them (25%) had some knowledge of Japanese health care from their home countries through the internet. Their highest three factors concerning health care was: language, relationship with medical staffs, and payment .They were also concerned about payment methods.

Conclusion: Although the participants could communicate with English, they felt they had some difficulty to communicate with local Japanese and medical words were not easy to communicate to the medical staff. In order to help European tourists, the Japanese health system needs to better prepare for European tourists at the national level: English communication strategies for medical staffs, provide timely interpreters, understand European culture, and provide knowledge of the Japanese health system included payment methods before departure from their home countries.

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APTHC-0718
CHARACTERIZATION OF A CASE OF HEPATITIS E THAT IMPORTED FROM SPAIN

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Hepatitis E virus (HEV), a non-enveloped single-stranded positive-sense RNA virus, belongs to the genus *Hepevirus* in the family *Hepeviridae.* HEV is a causative agent of hepatitis E worldwide. Up to date at least four genotypes (genotype 1-4) of HEV were isolated from humans. Zoonotic transmission of HEV is increasingly recognized and the evidence has been found in domestic swine, wild boar, and deer, suggesting that hepatitis E is a zoonosis. In addition to zoonotic infection, imported infection is another HEV transmission route. HEV imported not only from Asia and Africa countries where sanitation conditions are insufficient, but also from Europe. In this study we identified a case of acute hepatitis E imported from Spain, and characterized the full genome and antigenicity, and established a cell culture system to grow this strain.

Materials and method. A patient, back to Japan from a trip to Spain, developed acute hepatitis six weeks later. HEV RNA was extracted from serum of the patient and full genome of HEV was amplified by RT-PCR. To produce the virus like particle (VLPs) the capsid protein of HEV was expressed using a recombinant baculovirus expression system and the antigenicity of the VLPs was compared with that of other HEV strains. To isolate HEV the patient serum was inoculated into a hepatocarcinoma cell line, PLC/PRF/5, and the culture medium was changed with the new medium every three days, and used for the detection of HEV Ag and HEV RNA by ELISA and RT-PCR, respectively.

Result. Anti-HEV IgM and IgG antibodies, and HEV RNA were detected in patient serum, indicating the patient was infected with HEV. The genetic analysis indicated that the HEV strain belongs to G3 HEV forming a cluster with other Spainish isolates, demonstrating that the patient was infected HEV in Spain and imported to Japan. VLPs were produced by a recombinant baculovirus expression system. The antigenicity of the VLPs was similar to that

of other G3 HEV strains. When the HEV strain was used to inoculate PLC/PRF/5 cells, HEV Ag and RNA were detected in the cell culture supernatant, indicated that the HEV was capable of growing in the PLC/PRF/5 cells.

Conclusion In the present study we identified an import hepatitis E case from Spain and succeeded to isolate HEV by cell culture. These results indicated that HEV is imported to Japan from developed countries as well as developing countries.

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APTHC-0724
DEVELOPMENT OF RESIDENCY TRAINING OF TRAVEL MEDICINE IN THAILAND

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Travel Medicine is relatively new field of medicine in Thailand. It has been considered as a part of Tropical Medicine and included as a core module in the DTM&H program of Bangkok School of Tropical Medicine, Mahidol University for a long time. Not only the number of international travelers but also the body of knowledge of travel medicine is increasing dramatically in the last decade. Thus since 2008, the school has offered an additional elective module i.e. "Practice in Travel Medicine" (2 credits).

The development of residency training program in Travel Medicine in Thailand was started in 2011. The curriculum development committee was from the Thai Society of Travel Medicine, the Faculty of Tropical Medicine, and the Association of Preventive Medicine of Thailand. It took almost two years to develop the course curriculum with great support from many tropical/travel medicine and public health authorities in Thailand. Finally the Thai Medical Council approved this 3 years residency training program in 2013. This is the first time that Travel Medicine is officially recognized as a unique specialty in

Thailand. This first training will be in June 2014 and those who successfully complete the course will get the "Board Certified" from Thai Medical Council. Structure of the training program is shown in table below.

Table 1 Summary of the Residency training program curriculum

Subject	Month
Fundamental and Principles of Preventive Medicine	1.5
Fundamental and Principles of Travel Medicine	1
Principal and practice of risk assessment, risk communication and risk management in Travel Medicine	1.5
Tropical Medicine and Common travel-related health problems	4
Public health issues in Travel Medicine (Epidemiology, Surveillance, outbreak investigation, surveillance, Port health control, etc)	4
Aviation Medicine	1
Elective subjects	2
Clinical Practices in Tropical Medicine and Travel Medicine	9
Study the Master degree in Clinical Tropical Medicine (Course work, research methodology, thesis)	12
Total	36

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APTHC-0736
FINDING PATHOGENS AMONG VECTORS THROUGH VARIES MOTHODS IN 25 PORTS OF CHINA

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Objective to finding pathogens in vectors through a series of detection methods for quarantine. **Methods** Molecular biology technology was applied to detect three kinds of pathogens(*Hantavirus*, *Rickettsia mooseri* and *Bartonella*)in mice, two kinds of pathogens (*Borrelia burgdorferi* and *Anaplasma phagocytophilum*)carried by ticks and two kinds of pathogens(Japanese encephalitis virus and West Nile virus)carried by mosquitoes. Pathogenic bacteria(opportunistic pathogens) carried by flies and cockroaches were detected by using the bacteria cultivation technique.

Parasite eggs carried by flies and cockroaches were also detected by using the saturated saline flotation method. **Results** From Oct, 2005 to Dec, 2012 ,vectors were sampled systematically at 25 ports,including Dalian, Zhuanghe,Changhai, Dandong, Shenyang, Jinzhou, Tianjin and Shanghai, and more than 58 ships of international voyage from 18 different countries such as South Korea, Japan, North Korea, Cambodia, Georgia and Panama. 7793 vector samples were collected,49 different kinds of pathogens were detected ,including *Hantavirus*,*Rickettsia mooseri*,*Bartonella*,*Borrelia burgdorferi*, *Anaplasma phagocytophilum*, Japanese encephalitis virus,*Vibrio damsela,Kleabsiella peneumoniae,Staphylococcus sciur, Fasciola hepatica* egg,*Ascaris lumbricoides* egg, *etc.* 12 kinds of pathogens were detected for the first time around the world or at the port of Liaoning. The detection rates of *Hantavirus* ,*Rickettsia mooseri* and *Bartonella* in mouse samples were 11.24%(48/427),0.68%(1/146)and 1.44%(2/139),respectively.The detection rates of *Borrelia burgdorferi* and *Anaplasma phagocytophilum* in tick samples were 17.56%(170/968)and 39.05%(66/169).The minimum infection rate of the Japanese encephalitis virus is 0.07%(1/1410)among mosquitoes. The minimum infection rate of pathogenic bacteria(opportunistic pathogens) among flies is 2.07%(37/1786),and that among cockroaches is 2.02%(38/1880). The detection rate of parasite eggs in flies and cockroaches is 0.35%(3/868). **Conclusion** The positive samples of the pathogens (such as *Hantavirus*,*Borrelia burgdorferi*, *Anaplasma phagocytophilum*, *etc*.) are relatively high at ports. Imported vectors carried *Rickettsia mooseri*, parasite eggs and a lot of pathogenic bacteria, existing risk of importing and exporting pathogens by the vectors.

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APTHC-0742
CHARACTERISTICS OF KOREAN INTERNATIONAL TRAVELERS VISITING A ADULT IMMUNIZATION AND TRAVEL CLINIC

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Background:
Korea Medical Institute (KMI) is a specialized institution in comprehensive health examination services, and consists of seven health promotion centers with 130 medical staffs. More than 800 thousand persons visited the KMI for regular health checkups annually.

Adult Immunization and Travel Clinic (AITC) in KMI, opened on June 2012, is the first travel clinic based on the health promotion center in Korea.

Objective: We investigated the characteristics of Korean International Travelers visiting a AITC

Method: 4424 consecutive visitors who presented at our AITC between 25 June 2012 and 24 June 2013 were included for this study. Data were entered into an Excel data base and analyzed using SPSS. Chi-square or Fisher exact tests were used to test for differences between groups. t-tests were used for continuous variables. statistical significance was set at $p< 0.05$.

Results: Among the 4424 visitors, 2534 (57.3%) were korean international travelers and 1890 (42.7%) were visitors for immunization. Of those 2534 travelers, 1636 (64.6%) were male with the mean age was 38.7 and 898 (35.4%) were female with the mean age was 33.6.
Popular travel areas were Asia with 1711 travelers (67.5%), Europe with 303 travelers (12.0%), North America with 240 travelers (9.5%) and Oseania with 191 travelers (7.5%). The main reasons for the travel were vacation with 1560 travelers (61.6%), business with 637 travelers (25.1%), resident employee with 197 travelers (7.8%), and volunteering with 56 travelers (2.2%).

Conclusion:
1. Most of the Korean international travelers (75%) were visiting the Asia-Pacific lesion
2. Statistical significance was shown (Male>Female: age, travel to africa, travel for business, travel for resident employee vs Female>Male: travel to europe, travel for vacation, travel for volunteering, travel for studying abroad)

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APTHC-0755
ALTITUDE SICKNESS, A HYPOTHESIS. THE NORWEGIAN KILIMANJARO EXPEDITION 2013

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Objective: To study the cause of altitude sickness.

Method: Expedition with 17 participants climbing Kilimanjaro, some using Diamox some not, supplemented with literature study on the specifics of cell reactions to extreme conditions.

Conclusions: High altitude pulmonary edema and high altitude cerebral edema is caused by the peripheral cells reaction to extreme conditions. Pulmonary symptoms are caused by the lung capillaries reaction to hypoxia and cerebral edema is caused by respiratory alkalose due to hyperventilation. Oxygen is “measured” in the mitochondria of the lung capillaries endothelium. Hypercapnia causes vasodilatation, hypocapnia causes vasoconstriction in the cerebral circulation. The alkalose is “measured” by cell membrane proteins that regulate pH, the so called exchanger molecules. Interstitial fluid has a buffer capacity of 25-30 mmol/l. Altitude sickness happens when these regulatory mechanisms aren’t capable of compensating any longer.

Suggestions for emergency treatment are presented.

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APTHC-0773
TRAVEL HEALTH ADVISORY GROUP: A JOINT TRAVEL INDUSTRY AND TRAVEL HEALTH SPECIAL INTEREST GROUP PROMOTING HEALTHY TRAVEL

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Background: The Travel Health Advisory Group (THAG), established in 1997, is a joint initiative between the Australian travel industry and travel medicine professionals that aims to promote healthy travel. THAG seeks to promote cooperation in improving the health of travellers between the travel industry and travel medicine professionals and to raise public awareness of the importance of travel health.

Methods: The poster describes the major activities of THAG which include: networking and exchange among groups interested in travel health; travel health promotion targeting travel service providers and the public; undertaking travel health research, where possible; and the maintenance of an increasingly popular travel health public website.

Results: THAG is a Special Interest Group of The Australasian College of Tropical Medicine (ACTM). THAG's welltogo.com.au website has been in operation since 2004 and its mirror site, welltogo.org.au since 2011. The website was ranked Page 1 (#6) on a search of Google.com.au and Page 4 (#3) on a search of Google.com (as at 22 January 2014). THAG members, who are representatives of 9 professional organisations and industry groups, advocate for healthy travel in a number of forums. A travel health bookmark is available for distribution through travel agents and THAG members (can be ordered free in Australia via the THAG website in small quantities). THAG has also undertaken a number of research projects involving Australian travelers and published several papers in the leading travel medicine journals.

Conclusions: A partnership approach between the travel industry and travel medicine professionals can effectively support a range of activities to promote the health of travelers. The THAG welltogo.com.au/welltogo.org.au website is now making an important contribution in providing information to the Australian public on travel health.

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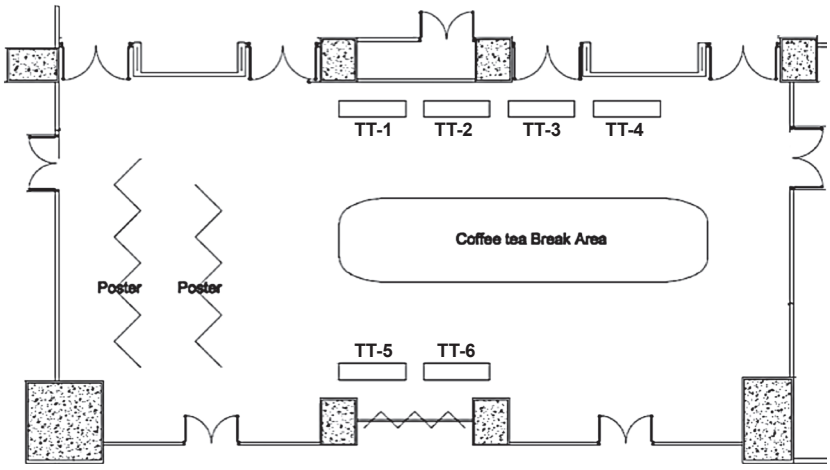
Sigma-Tau has operating subsidiaries throughout Europe, US and Asia and maintains a presence in all of the world's major pharmaceutical markets.

LIST OF EXHIBITORS

TT-1 International Society of Travel Medicine
TT-2 International SOS
TT-3 Skin Shield Products Ltd
TT-4 Future Events Table

EXHIBITION FLOOR PLAN



EXHIBITORS' PROFILES

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The International Society of Travel Medicine (ISTM) is committed to the promotion of healthy and safe travel. In cooperation with health care providers, academic centers, the travel industry and the media, ISTM advocates and facilitates education, service, and research activities in the field of travel medicine. This includes: preventive and curative medicine within many specialties such as tropical medicine, infectious diseases, high altitude physiology, travel related obstetrics, psychiatry, occupational health, military and migration medicine, and environmental health.

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INTERNATIONAL SOS

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